REPORT OF THE TWENTY-EIGHTH ANNUAL MEETINGS OF THE COMMISSIONS

ILULISSAT, GREENLAND

4 – 6 JUNE 2011

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REPORT OF THE

TWENTY-EIGHTH ANNUAL MEETING

OF THE

NORTH AMERICAN COMMISSION

4 – 6 JUNE 2011
Ilulissat, Greenland

Chairman:	Mr Stephen Gephard (US)
Vice-Chairman:	Mr Guy Beaupré (Canada)
Rapporteur:	Mr Brett Norton (Canada)
Secretary:	Dr Malcolm Windsor

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NAC(11)8

Report of the Twenty-Eighth Annual Meeting of the North American Commission

Hotel Arctic, Ilulissat, Greenland

4 - 6 June 2011

1. Opening of the Meeting

1.1 In the absence of both the Chair, Mr Stephen Gephard (USA), and the Vice-Chair, Mr Guy Beaupré (Canada), Mr George Lapointe (USA) was appointed to serve as Chair of the North American Commission for the Twenty-Eighth Annual Meeting.

1.2 The Chair opened the meeting and welcomed participants to the Twenty-Eighth Annual Meeting of the Commission.

1.3 Canada made an opening statement (Annex 1). An opening statement was made on behalf of the NGOs (Annex 2).

1.4 A list of participants at the Twenty-Eighth Annual Meeting of the Council and Commissions is included on page 171 of this document.

2. Adoption of the Agenda

2.1 The Commission adopted its Agenda NAC(11)7 (Annex 3).

3. Nomination of a Rapporteur

3.1 Mr. Brett Norton (Canada) was appointed as Rapporteur.

4. Review of the 2010 Fishery and ACOM Report from ICES on Salmon Stocks in the Commission Area

4.1 The representative of ICES, Mr Gérald Chaput, presented the report from ICES on the scientific advice concerning salmon stocks in the North American Commission (NAC) area, CNL(11)8. His presentation is available as document NAC(11)9. The ICES Advisory Committee (ACOM) report, which contains the scientific advice relevant to all Commissions, is included on page 119 of this document.

5. The St Pierre and Miquelon Salmon Fishery

5.1 The Chair drew the attention of the Commission to the Council document presenting information on the St Pierre and Miquelon fishery, CNL(11)16.

5.2 The representative of France (in respect of St Pierre and Miquelon) provided additional information to the Commission on its plans for 2011. Regarding the ICES review of the genetic identification, Canada and the United States extended offers to

France (in respect of St. Pierre and Miquelon) to assist in the sample analysis of the St. Pierre and Miquelon fishery. The representative of France (in respect of St. Pierre and Miquelon) welcomed the offers of assistance and will consider proposals to improve the reference database used for river of origin analysis.

5.3 Canada, supported by the United States and the NGOs, encouraged France (in respect of St. Pierre and Miquelon) to accede to the NASCO Convention. The representative of France (in respect of St. Pierre and Miquelon) referred to the letter provided to the NASCO Secretariat along with the information on its fishery in May 2010 which outlines its rationale for remaining an Observer to NASCO.

6. Salmonid Introductions and Transfers

6.1 In 2010, the Commission considered a Review of the NAC Database on Introductions and Transfers and the Scientific Working Group, NAC(10)6. Further in 2010, the Parties agreed: (1) that a detailed international database was no longer necessary; (2) to provide focused annual reports to the Commission on issues of mutual concern; (3) to identify experts who could work over the coming months to identify priority mechanisms and requirements for information exchange on fish health issues and; (4) to make minor revisions to the NAC Protocols for the Introduction and Transfer of Salmonids to reflect the new information exchange mechanism.

6.2 While the Commission agreed in 2010 to changes in the NAC Protocols (NAC(10)6) no request was made to the Council to amend the Williamsburg Resolution. Therefore, the Commission would like to request that the Council agree to modify Appendix 1 of the Williamsburg Resolution, which contains the NAC Protocols, consistent with minor wording changes contained in NAC(10)6 .

6.3 The United States and Canada each tabled their respective NAC Annual Reports for 2010 (NAC(11)3, Annex 4 and NAC(11)6, Annex 5 respectively). This should allow actions under point 3 (Item 6.1 above) to proceed and for the group to report back to the Commission at the NASCO Annual Meeting in 2012.

7. Sampling in the Labrador Fishery

7.1 Canada tabled document NAC(11)4 (Annex 6) which provides an update on the sampling activity in the Labrador fishery in 2010 as well as an overview of the salmon fishery in Labrador.

8. Announcement of the Tag Return Incentive Scheme Prize

8.1 The Chairman announced that the draw for the North American Commission prize in the NASCO Tag Return Incentive Scheme was made by the Auditor on 12 May. The winning tag was of Canadian origin. The tag was applied to a wild salmon in the Northwest Miramichi River, New Brunswick on 30 June 2010. It was recaptured in the same river on 20 August 2010. The winner of the US$1,500 prize is Mr Bill Haining, New Brunswick, Canada.

9. Recommendations to the Council on the Request to ICES for Scientific Advice

9.1 The Commission agreed to the request for scientific advice from ICES prepared by the Standing Scientific Committee in relation to the North American Commission area. The request to ICES, as agreed by the Council, is contained in document CNL(11)10 (Annex 7).

10. Other Business

10.1 There was no other business.

11. Date and Place of the Next Meeting

11.1 The Commission agreed to hold its next meeting at the same time and place as the Twenty-Ninth Annual Meeting of the Council in 2012.

12. Report of the Meeting

12.1 The Commission agreed a report of the meeting.

Note: The annexes mentioned above begin on page 13, following the French translation of the report of the meeting. A list of North American Commission papers is included in Annex 8.

NAC(11)8

Compte rendu de la Vingt-huitième réunion annuelle de la Commission Nord-Américaine de l'Organisation pour la Conservation du Saumon de l'Atlantique Nord

Hôtel Arctic, Ilulissat, Groenland

4 - 6 juin 2011

1. Séance d'ouverture

1.1 En l'absence du Président M. Stephen Gephard (États-Unis) et le Vice-président M. Guy Beaupré (Canada), M. George Lapointe (États-Unis) a été élu Président de la Commission Nord-Américaine pour la Vingt-huitième réunion annuelle.

1.2 Le Président a ouvert la réunion et a souhaité la bienvenue aux représentants à la Vingt-huitième réunion annuelle de la Commission.

1.3 Le Canada a prononcé une allocution d'ouverture (annexe 1). Une allocution d'ouverture a également été prononcée conjointement au nom des ONG (annexe 2).

1.4 La liste des participants à la Vingt-huitième réunion annuelle du Conseil et des Commissions de l'OCSAN figure à la page 171 de ce document.

2. Adoption de l'ordre du jour

2.1 La Commission a adopté l'ordre du jour NAC(11)7 (annexe 3).

3. Nomination d'un Rapporteur

3.1 M. Brett Norton (Canada) a été nommé Rapporteur.

4. Examen de la pêcherie de 2010 et du rapport du Comité Consultatif (ACOM) du CIEM sur les stocks de saumons dans la zone de la Commission

4.1 Le représentant du CIEM, M. Gérald Chaput, a présenté le rapport du CIEM sur les recommandations scientifiques particulières aux stocks de saumons de la zone de la Commission Nord-Américaine (CNA), CNL(11)8. Le document NAC(11)9 reproduit sa présentation. Le rapport de l'ACOM, contenant les recommandations scientifiques pour l'ensemble des Commissions, figure à la page 119 de ce document.

5. Pêcherie de saumons à Saint Pierre et Miquelon

5.1 Le Président a attiré l'attention de la Commission sur le rapport du Conseil, portant sur la pêcherie à Saint Pierre et Miquelon, CNL(11)16.

5.2 Le représentant de la France (pour Saint Pierre et Miquelon) a fourni à la Commission

des renseignements supplémentaires concernant les projets de son pays pour 2011. En ce qui concernait l'étude de l'identification génétique du CIEM, le Canada et les États-Unis ont proposé leur soutien à la France (pour Saint Pierre et Miquelon) pour effectuer l'analyse de l'échantillonnage de la pêcherie de Saint Pierre et Miquelon. Le représentant de la France (pour Saint Pierre et Miquelon) a accueilli favorablement l'offre d'assistance et étudiera les propositions visant à améliorer la base de données référence utilisée pour l'établissement des rivières d'origine.

5.3 Fort du soutien des États-Unis et des ONG, le Canada a encouragé la France (pour Saint Pierre et Miquelon) à accéder à la Convention de l'OCSAN. Le représentant de la France (pour Saint Pierre et Miquelon) s'est reporté à la lettre qui accompagnait l'information concernant sa pêcherie et qui avait été envoyée au mois de mai 2010 au Secrétariat de l'OCSAN. Ce courrier exposait brièvement les raisons pour lesquelles La France (pour Saint Pierre et Miquelon) désirait demeurer Observatrice vis-à-vis de l'OCSAN.

6. Introductions et transferts de salmonidés

6.1 En 2010, la Commission avait étudié une Révision de la base de données de la CNA sur les Introductions et Transferts et du groupe de travail chargé des questions scientifiques, NAC(10)6. Outre ceci, les Parties avaient convenu : (1) qu'une base de données détaillée internationale n'était plus nécessaire ; (2) de fournir à la Commission des rapports spécifiques portant sur des sujets de préoccupation mutuelle ; (3) d'identifier des experts qui pourraient, au cours des mois prochains, travailler sur l'identification des mécanismes et des besoins prioritaires en ce qui concernait les échanges d'informations sur la santé du poisson ; (4) d'apporter des modifications mineures aux Protocoles de la CNA sur les Introductions et Transferts de salmonidés qui reflèteraient le nouveau mécanisme d'échange des informations.

6.2 Même si la Commission avait convenu en 2010 d'amender les Protocoles de la CNA (NAC(10)6), aucune demande n'avait été soumise au Conseil pour amender la Résolution de Williamsburg. La Commission désirerait par conséquent que le Conseil donne son approbation à la modification de l'Appendice 1 de la Résolution de Williamsburg (appendice qui contenait les Protocoles de la CNA). Cet amendement correspondrait aux modifications mineures apportées au texte du document NAC(10)6.

6.3 Les États-Unis et le Canada ont respectivement présenté leur Rapport annuel CNA de 2010 (NAC(11)3, annexe 4 et NAC(11)6, annexe 5), ce qui devrait permettre de faire progresser les actions mentionnées au point 3 (article 6.1 ci-dessus) ainsi que de permettre au groupe de rendre compte à la Commission des progrès effectués lors de la Réunion annuelle de l'OCSAN en 2012.

7. Échantillonnage de la pêcherie du Labrador

7.1 Le représentant du Canada a présenté un rapport (NAC(11)4, annexe 6) sur la pêcherie de saumons du Labrador ainsi qu'une mise à jour de l'activité d'échantillonnage de cette pêcherie qui avait eu lieu en 2010.

8. Annonce du Prix du Programme d'encouragement au renvoi des marques

8.1 Le Président a annoncé que le tirage au sort du prix de la Commission Nord-Américaine du Programme d'encouragement au renvoi des marques de l'OCSAN a été effectué par le Commissaire aux comptes le 12 mai. La marque gagnante était d'origine canadienne. Elle avait été posée sur un saumon sauvage dans la Rivière Miramichi Nord-ouest, au Nouveau Brunswick, le 30 juin 2010. Ce poisson avait été de nouveau capturé dans la même rivière, le 20 Août 2010. M. Bill Haining, du Nouveau-Brunswick, au Canada a remporté le prix de 1 500 dollars.

9. Recommandations au Conseil dans le cadre de l'avis scientifique émanant du CIEM

9.1 La Commission a accepté la demande au CIEM de recommandations scientifiques, telle qu'elle avait été préparée par le Comité Scientifique Permanent pour la zone de la Commission Nord-Américaine. La demande de recommandations scientifiques adressée au CIEM et approuvée par le Conseil figure dans le document CNL(11)10 (annexe 7).

10. Divers

10.1 Aucune autre question n'a été traitée.

11. Date et lieu de la prochaine réunion

11.1 La Commission a convenu de tenir sa prochaine réunion en même temps et au même endroit que la Vingt-neuvième réunion annuelle du Conseil en 2012.

12. Compte rendu de la réunion

12.1 La Commission a accepté le compte rendu de la réunion.

Note : Les annexes mentionnées ci-dessus commencent à la page 13. Une liste des documents de la Commission Nord Américaine figure à l'annexe 8

Annex 1

Opening Statement made by Canada to the North American Commission

As I mentioned during my opening remarks in Council, in November 2010, the Committee on the Status of Endangered Wildlife in Canada (better known as COSEWIC) assessed the status of wild Atlantic salmon in Canada. The assessment confirms what many of us already knew – that much work is still required to conserve and restore wild Atlantic salmon stocks in Canada.

Across Atlantic Canada, there are approximately 750 salmon rivers and, despite numerous management actions, returns to these rivers of adult salmon remain low relative to the 1980s and early 1990s. While the returns of small salmon to eastern Canada were greatly improved from 2009 in all areas except Labrador, returns to North America of large salmon were down compared to 2009, driven mostly by low returns to Labrador.

In 2010, conservation limits were met in 48% of 65 assessed rivers. Survival rates at sea of small salmon were better for the 2009 smolts compared to the 2008 smolts. Survival rates of large salmon from the 2008 smolts were also improved from the previous year. While large salmon abundance in 2011 could be improved from 2010, following on improved survival of the 2009 smolt cohort, the overall situation is a major concern.

Given this situation, Fisheries and Oceans Canada has taken steps to support the conservation and restoration of wild Atlantic salmon stocks.

In the Labrador fishery, where salmon by-catch in the resident subsistence trout fishery is permitted, and three food, social and ceremonial fisheries using nets in coastal waters is permitted for the Nunatsiavut Government, the Labrador Metis Nation and the Innu Nation, the Department has implemented management measures to reduce the harvest of large salmon.

The changes affecting the retention of large salmon in Labrador became effective in 2011 are as follows:

- the retention of large salmon in the recreational fishery is no longer permitted on the unclassified rivers of Labrador (Zones 1 and 2); and
- the number of salmon permitted to be retained as by-catch in the subsistence trout net fishery has been reduced by 25% from four (4) to three (3).

Discussions are also continuing with Aboriginal organizations about reducing the catch of large salmon in their food, social and ceremonial fisheries in Labrador. Perhaps more information on these fisheries would be helpful at this point. In Eastern Canada, Aboriginal and food fisheries take place subject to agreements or though licences issued to Aboriginal groups and are recognized as a right; all other fisheries are a privilege and have presented an allocation challenge. In 1990 the Supreme Court of Canada re-affirmed this right for priority access for food, social and ceremonial purposes over all other fisheries.

DFO is also in the process of adding another monitoring site in Labrador, on the Eagle River, which is the largest Atlantic salmon river in Labrador to follow trends in wild Atlantic salmon abundance.

Canada has provided an estimate for unreported catch of 25.7 tonnes. We are committed to working with the various regions and jurisdictions responsible for Atlantic salmon to provide the best estimate possible for unreported catch in 2011 based on a solid methodology, while remaining focused on actively reducing unreported catch.

In terms of work carried out under the framework of the North American Commission, Canada would like to thank the United States for its 2010 NAC Report. Canada is confident that this new format will improve and streamline the reporting on issues of mutual concern under the MOU signed between Canada and the US in 2005.

Thank you.

Annex 2

Joint NGO Opening Statement to the North American Commission

The NGOs believe that NASCO's ability to achieve a low Internal Consumption Fishery and maintain a zero commercial quota at Greenland is compromised by the large harvest of wild Atlantic salmon in Canada. An increased fishery at Greenland puts at further risk endangered salmon that are protected under national legislation in the US and salmon from many rivers in Canada that have recently been designated as endangered, threatened or of special concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

We urge Canada to ensure that management plans for First Nations and the recreational salmon fishery require reduction in harvest and adherence to the ICES advice with respect to the elimination of harvests of large spawners from rivers not meeting spawning targets and from mixed stocks.

The final report of the Aquaculture Focus Area Group concludes that neither the United States nor Canada has demonstrated progress towards achieving the international goals for sea lice and containment.

There were reported escapes of about 200,000 farmed salmon in the Bay of Fundy in the final quarter of 2010. These escaped salmon are not only threats to endangered populations in the Bay of Fundy, but also in the Gulf of Maine.

In Canada, open cage salmon farms are located near rivers where wild salmon populations are designated as endangered or threatened. In the US, salmon farms are located at the mouths of wild salmon rivers with endangered populations. A peer reviewed study, published by Dalhousie University in 2008, found that the presence of salmon farms reduced wild salmon survival by more than 50% per generation.

A recent peer-reviewed scientific report published in *Heredity Journal*, authored by Laval University, DFO, ASF and the Norwegian University of Life Sciences, documented that the wild salmon population of the Magaguadavic River in New Brunswick now contains farmed salmon genes and the progeny of these fish have significantly reduced survival compared to wild populations. This river is in the heart of the salmon aquaculture industry and is the North American index river for monitoring interactions between wild and farmed salmon. Its run of wild salmon has decreased from an annual average of 800 in the 1980s to 12 in 2010.

We look to both Canada and the US to ensure that their obligations as Parties to NASCO are met through exercising the Precautionary Approach and ensuring that the health and survival of wild salmon take precedence over the development of industries that threaten them.

Annex 3

NAC(11)7

Agenda

1. Opening of the Meeting
2. Adoption of the Agenda
3. Nomination of a Rapporteur
4. Review of the 2010 Fishery and ACOM Report from ICES on Salmon Stocks in the Commission Area
5. The St Pierre and Miquelon Salmon Fishery
6. Salmonid Introductions and Transfers
7. Sampling in the Labrador Fishery
8. Announcement of the Tag Return Incentive Scheme Prize
9. Recommendations to the Council on the Request to ICES for Scientific Advice
10. Other Business
11. Date and Place of the Next Meeting
12. Report of the Meeting

Annex 4

NAC(11)3

NAC Annual Report 2010
(Tabled by the US)

USA, 2010
Submitted by: National Marine Fisheries Service
Date: 5 June 2011

1. Summary of Salmonid disease incidences

U.S. Point of Contact on Disease:

Sharon MacLean
28 Tarzwell Drive
Narragansett, RI 02882-1199 USA
PH: 401-782-3258
Sharon.Maclean@noaa.gov

Northeast Fish Health Committee Guidelines for Fish Importation
The NEFHC, which currently has representation from the states of ME, NH, VT, MA, CT, RI, NY, NJ, PA, MD, VA, WV and DE, was born out of the New England Salmonid Health Committee at the request of the Northeast Fisheries Administrators Association due to ever growing concerns about fish health and disease effects on populations, introduction of exotic pathogens to states' waters, and an increasing awareness that diagnosis and effective disease control measures are available. The most recent accepted guidelines for fish importation into northeastern states are provided in the link at the end of this section. However, proposed revisions to the NEFHC guidelines were recently approved by the NFAA, including the proposed listing criteria (immediately below).

Listing Criteria

- The identified pathogen shall be an obligate pathogen that has the potential to cause significant economic or biological loss among wild and cultured fish;
- The pathogen has a repeatable and robust means of detection and diagnosis.

The revised guidelines also offer the methods to be used: Sampling and laboratory test methods should be conducted according to current international, national and/or regional standards including those published in the OIE Manual of Diagnostic Tests for Aquatic Animals and the AFS-Fish Health Section "Bluebook" Inspection Section, with the sampling levels and methods specifically recommended in these guidelines.

Compliance with the guidelines is not mandatory, and annually there is a survey taken on the States' compliance with the Northeast Fish Health Guidelines for Fish Importation. VT, MA and ME fully comply with all the components of the NEFHG. CT expects full compliance in the near future. NH and NY are mostly compliant but need legislative action to be fully compliant. WV, NJ, PA are moving toward compliance but legislative action is required. MD and VA are not compliant and legislative action is unlikely. RI has not participated in or

contributed to meetings for the past several years due to budgetary inability to conduct fish health inspections of state hatcheries.

The New England Fish Health Committee Guidelines and the 2008 (unrevised) Northeast Fish Health Committee Guidelines are available on the Maine IFW website (http://www.state.me.us/ifw/fishing/health/index.htm).

Currently, all commercial Atlantic salmon aquaculture production is from a single company which tests all hatchery facilities according to Canadian FHPR regulations which exceed those requirements set forth by the State of Maine Department of Marine Resources in accordance with Northeast Fish Health Guidelines for Fish Importation. These requirements include a third party technician to screen 60 fish per lot for each facility twice per year, for the following pathogens:

Infectious Salmon Anemia
Infectious Pancreatic Necrosis Virus
Infectious Hemorrhagic Septicemia Virus
Viral Hemorrhagic Septicemia Virus
Oncorhyncus masou Virus
Aeromonas salmonicida
Bacterial Kidney Disease
Yersinia ruckeri
Myxobolus cerebralis
Ceratomyxa Shasta

In addition to twice annual inspections, 60 broodstock are sampled at time of spawning for the same items listed and 10 fish are tested for ISAV as part of a pre-spawn inspection. Any saltwater fish used for spawning must be sampled at a 100% inclusion rate. The above sampling is conducted as part of a lethal sampling protocol.

Routine testing is conducted prior to spring and fall stocking to help insure only healthy fish are transferred to other facilities including salt water sites. Additional brood stock testing on specific spawn dates is required to comply with the requirements of foreign countries to export eggs on a yearly basis.

The Maine Transfer Permit Application Process requires each facility to submit the most recent fish health test results at time of application to allow the DMR the ability to review the health status of the shipping facility prior to any approval or denial being granted for the movement of fish or eggs.

Updates on specific pathogens of concern detected in Atlantic salmon in New England
ISAV – The United States Fish and Wildlife Service screening procedure for ISAv in the blood of captive sea-run Atlantic salmon held as broodstock has been updated from standard RT-PCR to the much more sensitive and specific quantitative RT-PCR method published by Snow et al., 2006. In 2010 the q-RT-PCR assay detected the ISAv HPR0 genotype in nine of more than 600 pre-spawn fish taken from the Penobscot River, Maine, and one of 53 sea run salmon from the Merrimack River, NH. Sequence analysis confirmed the HPR0 genotype. Based on experience in salmon farms in Europe and North America, this genotype is non-pathogenic and is considered the 'wild type' of ISAv. As a precaution, all fish testing positive were removed from the holding facilities.

ISAv screening of the salmon farms in Maine continues as mandated by the State of Maine through a program formed in conjunction with USDA/APHIS which requires monthly veterinary inspections and ISAv-specific testing of selected moribund fish at all salmon farms. The last confirmed positive ISAv detection on salmon farms in Maine was made in Jan 2006. HPR0 has been detected over the years and in fewer and fewer farms in recent years, until 2010 when no detection of HPR0 was made from farms in Maine.

Ichthyophonus – Screening for *Ichthyophonus* in sea-run Atlantic salmon has been conducted during 2008 to 2010 following the discovery by USFWS of *Ichthyophonus* spores in tissues of Connecticut (CT) River 2007 broodstock. Heart, kidney and spleen taken from Connecticut River and Merrimack (MK) River sea-run salmon were assayed by culture of heart tissue and histology of all tissues. Fish were determined positive if spores and/or hyphae were observed in culture and/or histology. During 2007-2010, 24% (n=181) of CT River sea-runs were positive and during 2008-2010, 15% (n=115) of MK River sea-runs tested positive. Sequence analysis of representative *Ichthyophonus* cultures indicate two closely related strains in the ATS of both the Connecticut and Merrimack rivers. As a follow-on, NOAA is conducting a histologic survey of *Ichthyophonus* in ATS collected during the Salsea-NA and West Greenland projects in 2009 and 2010.

As a consequence of the detection of IPNv at the Cronin NSS in 2008, USFWS has been working on developing a q-RT-PCR assay for detection of IPNv in non-lethal samples of wild ATS.

2. Summary of breaches of containment of salmonids from net cages

Species (Strain, if applicable)	**Number[1]**	**Average size of fish[2]**	**Location[3]**	**Result Cause of the breach[4]**
NONE				

Notes:
The last reported escape event from U.S. commercial production facilities was in 2003.

3. Summary of Salmonid introductions from outside the Commission Area

Species (strain, if applicable)	**Number**	**Life Stage**	**Origin [1]**	**Destination [2]**	**Purpose [3]**
None					

Notes:
The report includes transfers from outside the commission area for all private and federal hatcheries in Maine that annually stock Atlantic salmon in support of commercial aquaculture and recovery of the Gulf of Maine Distinct Population Segment as listed under the U.S. Endangered Species Act.

Further, in 2007 Arctic Char eggs were transferred from Alaska Fish and Game to the United States Department of Agriculture (USDA), Aquatic Research Station National Cold Water Marine Aquaculture Center in Franklin, Maine, for research with a condition that they were not to be introduced to Maine waters.

In 2006, Atlantic salmon eggs were transferred from Troutlodge in Washington State to USDA facility for research.

4. Summary of Transgenic activities within the Country Annex 1 of NAC(10)6

The Food and Drug Administration received an application for approval to sell transgenic salmon in the United States. A private biotechnology company called Aqua Bounty, is pursuing legal authorization from the United States Food and Drug Administration (FDA) to distribute Genetically Engineered (GE) Atlantic salmon for commercial sale and human consumption in the U.S. The fish are being marketed as AquaAdvantage® salmon and will be sold in select retail stores as cleaned and gutted whole fish or further processed into filets. The application is being reviewed under the authority of the Federal Food, Drug and Cosmetic Act as a new animal drug because the genetic construct used to make genetically engineered animals is an "article" that meets the definition of a new animal drug. The FDA is reviewing this application in regards to food safety issues focusing on consumption hazards and associated risks posed to the public and will comply with all statutory requirements of the National Environmental Policy Act; which includes an Environmental Assessment (EA) and summary Finding of No Significant Impact (FONSI) or alternatively Environmental Impact Statement (EIS). The assessment of environmental impacts includes an evaluation for the following specific conditions of production and use; 1) production of eyed eggs in Prince Edward Island (PEI), Canada; 2) shipment of eyed eggs to Panama; 3) grow-out of fish in the highlands of Panama; 4) processing of fish in Panama; and 5) shipment of table-ready processed fish to the U.S. Therefore, because the fish is being grown outside of the U.S., only the importation and distribution of the processed whole fish and filets are being considered in the application. Any deviation from the above process will trigger a new action and will have to be reviewed under a separate application. Furthermore, the FDA is required to consult with NOAA Fisheries on environmental risks associated with GE seafood products, including the impact on wild fish stocks. Staff from NOAA Fisheries Aquaculture Program and Office of Protected Resources in Silver Springs, Maryland is currently consulting with the FDA on this manner. At this time, more research is needed to identify the impacts that escaped transgenic salmon would have on natural populations and their habitat before use for commercial aquaculture is considered.

Annex 5

NAC(11)6

NAC Annual Report 2010
(Tabled by Canada)

Canada, 2010
Submitted by: Fisheries and Oceans Canada
Date:

1. Summary of Salmonid disease incidences

Canadian Disease Experts:

- Dr. Jamey Smith
  James.smith@dfo-mpo.gc.ca
- Dr. Mike Beattie
  Mike. Beattie@gnb.ca
- A representative from CFIA

2. Summary of breaches of containment of salmonids from net cages

Species (Strain, if applicable)	Number[1]	Average size of fish[2]	Location[3]	Result[4]	Cause of the breach
Atlantic Salmon (Saint John River)	13,000	2 kg	BMA 1 Western Passage, NB	No recapture attempt	Seal breached net. Predator net removed for sea lice treatment
Atlantic Salmon (Saint John River)	33,000	1 kg	BMA 2B Grand Manan, NB	No recapture attempt	Herring weir stake breached net
Atlantic Salmon (Saint John River)	138,000	151 gram	BMA 2B Grand Manan, NB	No recapture attempt	Net failure, manufacturing flaw. Weather
Arctic charr	15,000	1.25 lbs	Lee Cove, Bay d'Espoir, NL	Recreational fishery used for recapture	Suspected vandalism and ice damage
Arctic charr	55,000	60g	Lee Cove, Bay d'Espoir, NL	Nets deployed but limited by ice	Suspected vandalism and ice damage
Atlantic salmon	100-200	4-5kg	Spoon Cove, Fortune Bay, NL	None	Harvesting spill
Steelhead trout	11,643	1.28kg	Hardy Cove, Bay d'Espoir, NL	Storm timelines made recapture non-productive	Hurricane Igor storm damage
Steelhead trout	20,800	85g	Conne River Wharf to Arran Cove, Bay d'Espoir, NL	None	Net caught on wharf caused undetected tear/hole during towing

Notes:

1. This should be the best estimate possible, though it is recognized that exact numbers may be difficult to obtain.
2. Based on the codes of containment, it was agreed that average size is a more accurate measurement than life stage.
3. The more specific the information the better, however Bay level is considered sufficient.
4. This refers to using recapture methods as detailed in the relevant code of containment and summarizing the results of the recapture attempt.

3. Summary of Salmonid introductions from outside the Commission Area

Species (strain, if applicable)	Number	Life Stage	Origin[1]	Destination[2]	Purpose[3]
None					

Notes:

1. This would be the province or state for introductions from the west coast; or country for international introductions. It was decided that introductions between Canada and the US that are within the Commission Area (between Maine and NB, for example) would not be included here as those introductions would be captured in other avenues (ICES WGITMO, for example) and because these are not as relevant.
2. The more specific the information the better, however Bay level is considered sufficient.
3. This refers to the intention for the introduction – aquaculture, research, stock enhancement, etc.

4. Summary of Transgenic activities within the Country

AquaBounty, a U.S.-based company with research facilities in PEI, Canada, has developed a genetically engineered Atlantic salmon with enhanced growth and feed conversion characteristics. AquaBounty has submitted a regulatory package to the U.S. Food and Drug Administration (USFDA) to seek food use approval for the GE salmon in the U.S. However, they have **not** submitted notification in Canada under the *Canadian Environmental Protection Act* New Substances Notification Regulations (Organisms). Under Canadian regulations, notification from the company of its intention to commercialize the GE salmon eggs would be required 120 days prior to the commencement of the commercial manufacture of the GE fish or fish eggs in Canada. An environmental and indirect (i.e. not related to direct consumption) human health risk assessment would then be carried out. DFO would be required to complete the risk assessments and provide a recommendation to Environment Canada for any control measures needed to manage risks. Environment Canada retains authority for regulatory decision-making.

Annex 6

NAC(11)4

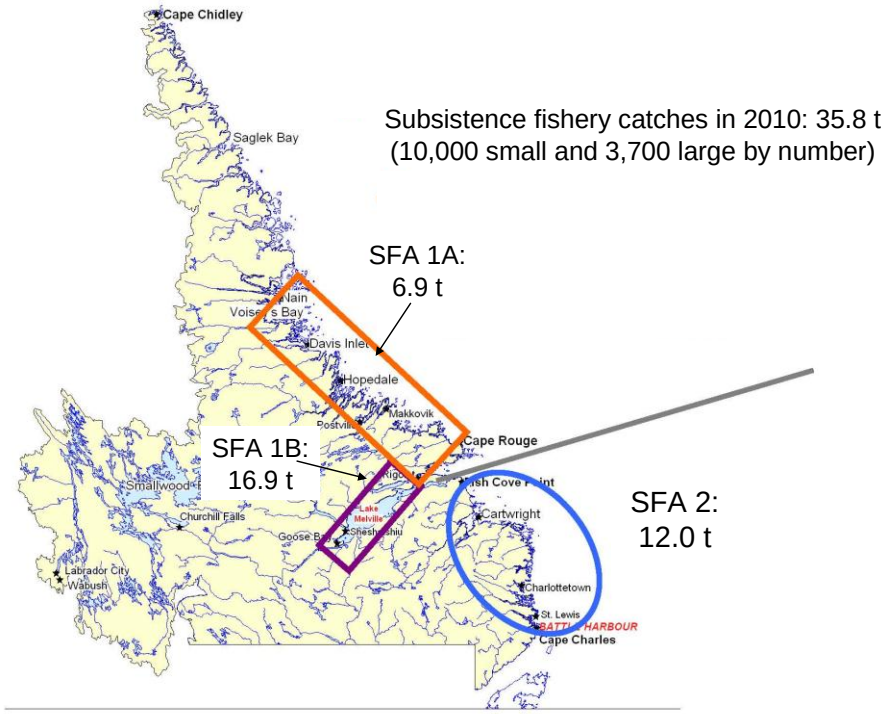
Report of the Labrador Atlantic Salmon Fisheries and Sampling Program

SALMON FISHERIES MANAGEMENT FOR LABRADOR

Three user groups in Labrador had access to Atlantic salmon in 2010.

Aboriginal fisheries

In Labrador (SFAs 1 and 2), Food, Social and Ceremonial (FSC) fishery arrangements with the Nunatsiavut Government, the Innu First Nation, and the NunatuKavut Community Council Inc. (formerly the Labrador Metis Nation), resulted in fisheries in estuaries and coastal areas. The permits generally stipulate gear (number of nets, length of nets, mesh sizes), season, and catch limits. All salmon must be tagged with carcass tags and logbooks are mandatory.



Location of Salmon Fishing Areas (SFA) in Labrador and reported harvests (t) by SFA in 2010.

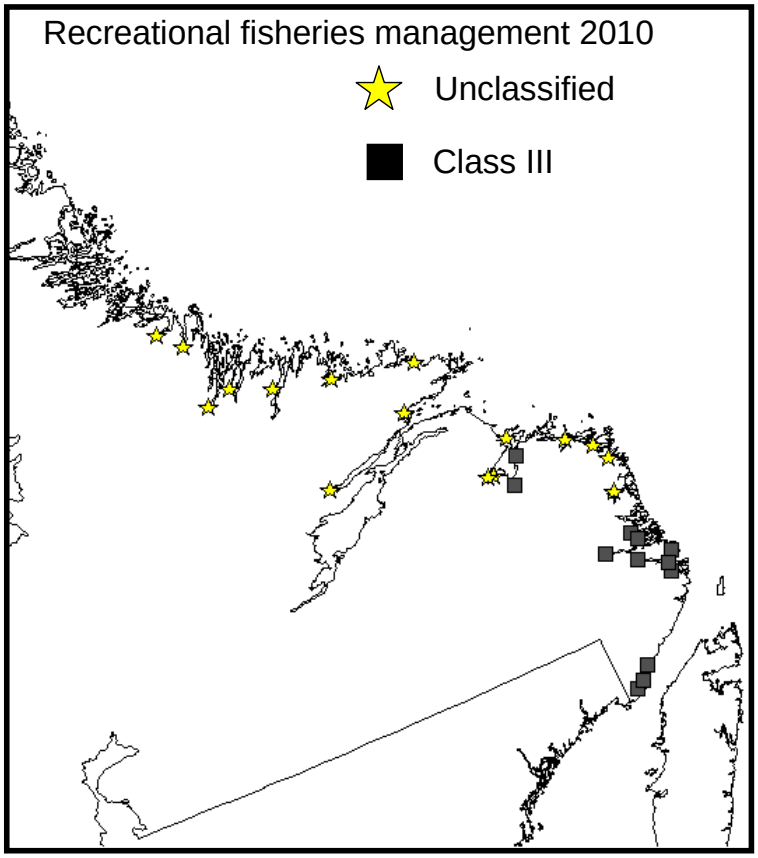
Resident food fishery

The Resident subsistence trout fishery, initiated in 2000, occurs in Lake Melville (SFA 1A) and southern Labrador (SFA 2) coastal communities from Cartwright to Cape St. Charles. A total of 320 licences were issued in 2010. The resident subsistence trout fishery targets trout (*Salvelinus fontinalis*) and arctic charr (*Salvelinus alpinus*) using gillnets with restrictions on quantity (one per licence), length (15 fathoms), and mesh size (maximum mesh size of 4 inches). There is a possibility of a bycatch of Atlantic salmon and as a result a maximum of

four salmon of any size can be retained by licence holders while fishing for trout and charr. Once the four salmon are captured, no more fishing is allowed. All salmon must be tagged and logbooks of catch and effort must be completed by the licence holders. Prior to 2004, a number of aboriginal peoples (NunatuKavut Community Council Inc. in particular) reported their harvests under the resident subsistence trout fishery management plan.

Recreational fishery

The recreational fishery in 2010 was managed by licence, season (June 15 to Sept. 15), and retention limits. Retention of small salmon and large salmon was allowed in "unclassified rivers" of SFA 1 and SFA 2 (Figure 2). Retention of small salmon only, class III, was allowed in nine scheduled rivers of SFA 2 and in three scheduled rivers in SFA 14B. In unclassified rivers where both small and large salmon retention was allowed, there was a season retention limit of 4 salmon of which only one could be a large salmon. In the class III rivers where only small salmon could be retained, a season limit of two small salmon was in place. In all rivers, there was a daily catch and release limit of four fish of any size.



Atlantic salmon recreational fisheries management in Labrador in 2010.

CATCHES AND HARVESTS

Total provisional harvests of Atlantic salmon in Labrador by all users in 2010 was 38.9 t of small salmon and large salmon combined, comprised of 22.98 t of small salmon and 15.88 t of large salmon. By number, the harvest represented 11,372 small salmon and 7,820 large salmon.

The aboriginal fisheries accounted for 86% (by weight) of the total harvest, followed by the recreational fishery at 8% and the resident food fishery at 6% (Table 1). In terms of number of fish harvested, the aboriginal fishery accounted for 89% of the large salmon harvest and 81% of the small salmon harvests (Table 1). Recreational fisheries accounted for 12% of the small salmon harvest and 5% of the large salmon harvest. The distribution of harvests among the user groups in 2010 is similar to those since 2004.

Harvest (weight and number) of small salmon, large salmon and combined in Labrador fisheries in 2010

User group	Small salmon	Large salmon	Total
By weight (t)	22.98	15.88	38.86
Aboriginal FSC	19.28 (83.9%)	14.25 (89.8%)	33.53 (86.3%)
Resident food fisheries	1.42 (6.2%)	0.84 (5.3%)	2.27 (5.8%)
Recreational	2.28 (9.9%)	0.78 (4.9%)	3.07 (7.9%)
By number	11,372	7,820	19,192
Aboriginal FSC	9,258 (81.4%)	3,489 (88.6%)	12,747 (83.3%)
Resident food fisheries	739 (6.5%)	250 (6.3%)	990 (6.5%)
Recreational	1,375 (12.1%)	200 (5.1%)	1,575 (10.3%)

The harvests (by number) of large salmon and small salmon in the aboriginal fisheries and the resident food fisheries in 2010 are within the range of values reported since 2004. The harvests of small salmon and large salmon in the recreational fisheries in 2010 are the lowest or the second lowest of the reported harvests over the 2000 to 2010 time series.

	Small salmon harvest (by number)			Large salmon harvest (by number)		
Year	Aboriginal	Resident	Recreational	Aboriginal	Resident	Recreational
2000	3,993	1,330	2,561	1,054	298	262
2001	3,259	1,530	2,049	1,272	449	338
2002	3,457	2,349	2,071	990	399	207
2003	4,183	2,294	2,112	1,568	608	222
2004	7,733	652	1,808	3,472	224	259
2005	9,515	921	2,007	2,588	228	291
2006	9,608	769	1,656	2,807	283	227
2007	8,567	640	1,762	2,559	93	235
2008	9,215	619	1,688	3,699	210	231
2009	7,182	806	1,355	3,031	313	216
2010	9,258	739	1,375	3,489	250	200

Detailed harvests (and catches for the recreational fishery) by user group and SFA for the period 2000 to 2010 are provided in Annex 1 tables 1 to 4.

HARVESTS BY LOCATION

All the recreational fisheries occurred in rivers (freshwater).

For the purposes of reporting the location of the harvests, the following definition of an estuary is used:

> "Partly enclosed coastal body of water in which river water is mixed with seawater. An estuary is thus defined by salinity rather than geography. Many coastal features designated by other names are in fact estuaries (e.g., Chesapeake Bay). Some of the oldest continuous civilizations have flourished in estuarine environments (e.g., the land between the Tigris and Euphrates rivers, the Nile delta, the Ganges delta, and the lower Huang He valley). Cities such as London (River Thames), New York (Hudson River), and Montreal (St. Lawrence River) developed on estuaries and became important commercial centres.
> D.W. Pritchard (1967. What is an estuary: physical viewpoint. p. 3–5 in: G. H. Lauf (ed.) Estuaries, A.A.A.S. Publ. No. 83, Washington, D.C.) states that an estuary must (1) be partially enclosed, (2) have river(s) running into it, (3) have mix of fresh and sea water. As such Lake Melville is considered to be an estuary" (D. Reddin DFO, ICES working document).

Based on interviews with guardian and fishery officers in Labrador, the following breakdown has been used to categorize the harvests of the subsistence fisheries (aboriginal and resident food) into estuary and coastal harvests (from D. Reddin DFO Unpublished data).

	Percent estuary	Percent coastal
SFA 1		
Lake Melville	100%	0%
Rigolet	85%	15%
Makkovik	75%	25%
Postville	90%	10%
Hopedale	10%	90%
Nain	0%	100%
SFA 2		
Sandwich Bay	85%	15%
Black Tickle	1%	99%
Ch'town-Lodge Bay	70%	30%

The majority of the Labrador subsistence food fisheries occur in areas classified as estuaries. Almost half of the total harvest of salmon in 2010, 16.9 t of 35.8 t, was reported from the Lake Melville area (SFA 1B) which is classified as estuary (Fig. 1). Based on the above percentages, the subsistence fishery harvest from coastal areas was estimated at 6.2 t, representing 17.4% of the total subsistence fishery harvest. The coastal harvest in 2010 represented about 1,800 small salmon and 620 large salmon.

The percent of the total harvest coming from costal areas in 2010 is the lowest since 2001.

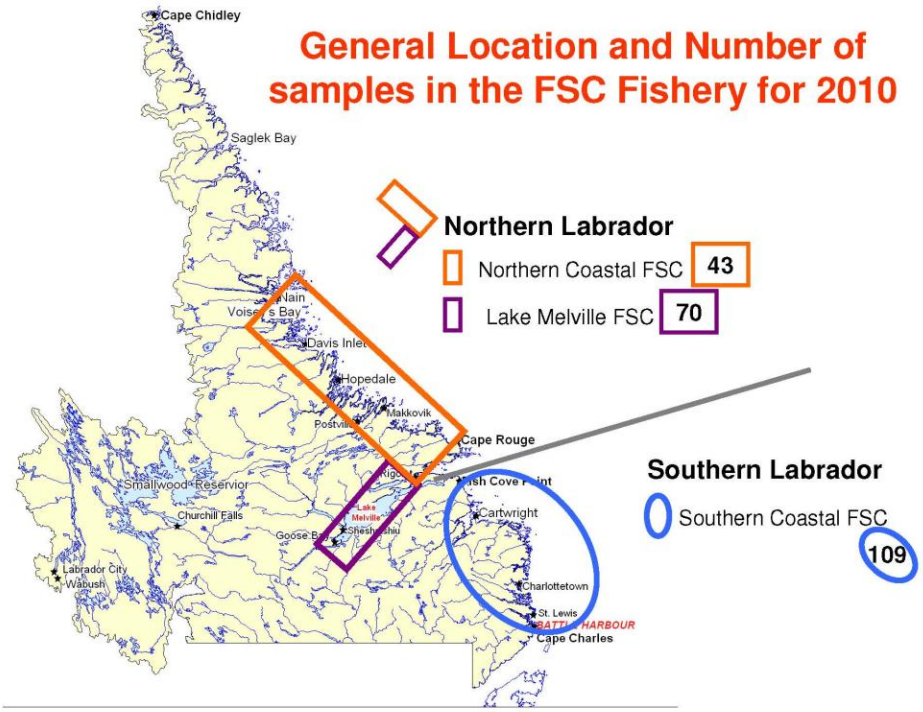
Labrador subsistence fisheries harvests (aboriginal and resident food) by geographic location

	Harvest (kg)			Percentage of harvest	
Year	Estuarine	Coastal	Total	Estuarine	Coastal
2000	13,278	2,335	15,613	85.0	15.0
2001	13,497	2,792	16,288	82.9	17.1
2002	13,987	3,585	17,572	79.6	20.4
2003	17,485	4,622	22,108	79.1	20.9
2004	24,862	6,787	31,649	78.6	21.4
2005	24,718	7,197	31,914	77.5	22.5
2006	24,955	7,766	32,721	76.3	23.7
2007	20,451	6,005	26,456	77.3	22.7
2008	27,040	9,321	36,361	74.4	25.6
2009	22,619	7,191	29,810	75.9	24.1
2010	29,563	6,232	35,795	82.6	17.4

LABRADOR FISHERIES SAMPLING PROGRAM

A sampling program of the subsistence fisheries in Labrador continued in 2010, conducted by the NunatuKavut Community Council (formerly the Labrador Metis Nation), aboriginal guardians, and Conservation Officers of the Nunatsiavut Government.

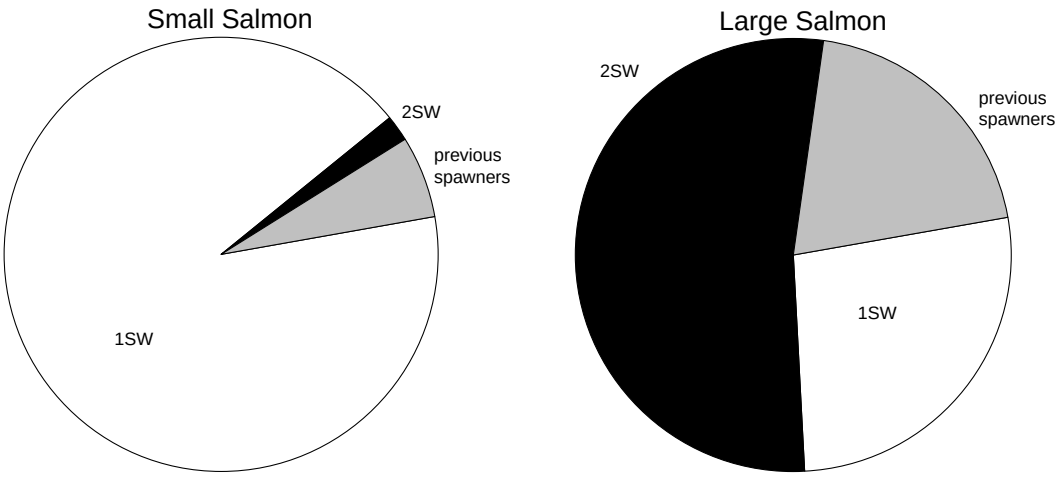
In 2010, a total of 237 samples were collected from the FSC fisheries, 123 from northern Labrador (SFA 1) and 114 samples from southern Labrador (SFA 2).



Location of samples collected from the Labrador Atlantic salmon subsistence fisheries in 2010.

Based on the interpretation of the scales from 232 samples, 73% of all the samples taken were 1SW salmon, 16% were 2SW, and 10% were previously spawned salmon.

By size group, small and large salmon based on a 2.7 kg cut off, small salmon were 92% 1SW, 2% 2SW and 6% previously spawned salmon and large salmon were 27% 1SW, 53% 2SW and 20% previously spawned salmon. These are similar to the age structure by size groups from previous years.



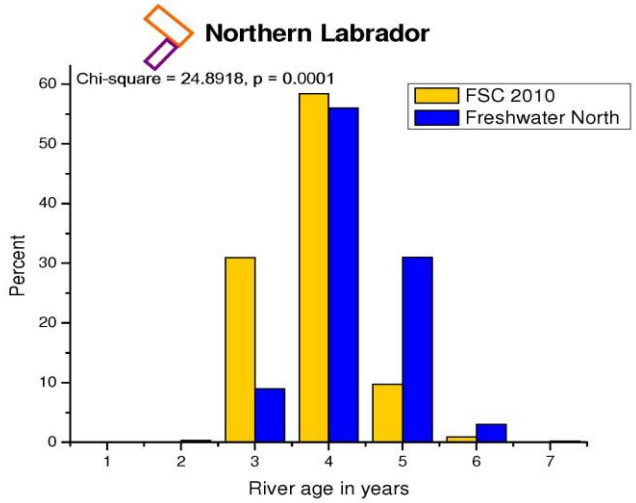
Proportions at sea age by small salmon and large salmon size groups.

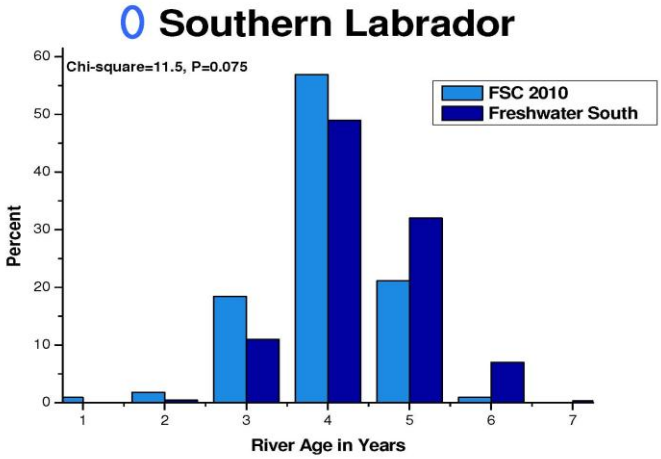
Applying these proportions by sea age to the catches of salmon considered to have been taken in coastal waters, there were approximately 365 2SW salmon harvested in the subsistence fisheries in the coastal areas of Labrador (620 large * 53% plus 1800 small * 2%).

The river ages of samples (113 in the north, 109 in the south) collected from the subsistence fisheries were compared to ages from scales (1,946 samples from north Labrador and 975 in south Labrador) obtained from assessment facilities in 2000 to 2005. As noted in previous years, there was a difference in river age distribution of adults from the subsistence fisheries compared to the river age distributions of adults returning to rivers in northern Labrador, with higher proportions of river age 3 and lower proportions of river age 5 salmon in the subsistence fisheries compared to the assessment facilities. The same differences in relative proportions of river age 3 and river age 5 were also noted for southern Labrador in 2010. The higher proportion of river age 3 smolts was also noted for the Lake Melville samples, but no samples are available from inriver monitoring to assess whether salmon from these populations have similar smolt age distributions to those populations in the coastal rivers of northern Labrador.

There were no river age 1 or 2 fish in the samples from the northern Labrador fishery (SFA 1) and a low percentage of river age 1 and 2 salmon in the samples from southern Labrador in 2010. The very low percentages of river age 1 and age 2 salmon in the catches of 2010, as in previous years, suggest that very few salmon from the most southern stocks of North America (USA, Scotia-Fundy) are exploited in these fisheries. The majority of salmon in the fisheries are of river ages 4 to 7 and indicates that the fisheries are exploiting northern area stocks, predominantly Labrador as well as some stocks from Quebec and portions of Newfoundland.

No tagged salmon were recovered or reported from the Labrador fisheries in 2010.





River age distributions of Atlantic salmon sampled from the subsistence fisheries of Labrador in 2010 relative to the river age distributions of adult salmon at inriver monitoring facilities in Labrador.

Annex 1. Reported harvests by user group, size group of salmon and Salmon Fishing Area, 2000 to 2010.

Table Annex1-1.

Aboriginal food fisheries

Year / Année	Harvest / Prélèvement (kg)	Number of fish / Nombre de poissons	% large by number / % grand par nombre
2000	12,077	5,047	20.9%
2001	11,705	4,531	28.1%
2002	11,425	4,448	22.3%
2003	15,449	5,751	27.3%
2004	29,478	11,205	31.0%
2005	29,226	12,103	21.4%
2006	30,140	12,415	22.6%
2007	24,774	11,126	23.0%
2008	34,044	12,913	28.6%
2009	26,955	10,213	29.7%
2010	33,529	12,747	27.4%

Residents fishing for food in Labrador

Year / Année	Harvest / Prélèvement (kg)	Number of fish / Nombre de poissons	% large by number / % grand par nombre
2000	3,537	2,300	21%
2001	4,583	2,100	24%
2002	6,146	2,700	17%
2003	6,659	3,000	21%
2004	2,171	880	25%
2005	2,688	1,150	20%
2006	2,581	1,052	27%
2007	1,682	733	13%
2008	2,317	830	25%
2009	2,856	1,119	28%
2010	2,266	990	25%

Recreational fisheries

Year / Année	Small salmon retained (number)	Large salmon retained (number)	% large by number / % grand par nombre
2000	2,561	262	9.3%
2001	2,049	338	14.2%
2002	2,071	207	9.1%
2003	2,112	222	9.5%
2004	1,808	259	12.5%
2005	2,007	291	12.7%
2006	1,656	227	12.1%
2007	1,762	235	11.8%
2008	1,688	231	12.0%
2009	1,355	216	13.7%
2010	1,375	200	12.7%

Table Annex1-2. Harvests in aboriginal fisheries in Labrador and by Salmon Fishing Areas (SFA). There are no aboriginal fisheries in SFA 14B.

	By weight (kg)			By number			% Large	
Year	Small	Large	Total	Small	Large	Total	By weight	By number
Labrador								
2000	7,873	4,205	12,077	3,993	1,054	5,047	34.8%	20.9%
2001	6,707	4,998	11,705	3,259	1,272	4,531	42.7%	28.1%
2002	7,077	4,348	11,425	3,457	990	4,448	38.1%	22.3%
2003	8,695	6,754	15,449	4,183	1,568	5,751	43.7%	27.3%
2004	16,077	13,401	29,478	7,733	3,472	11,205	45.5%	31.0%
2005	19,221	10,005	29,226	9,515	2,588	12,103	34.2%	21.4%
2006	19,623	10,516	30,140	9,608	2,807	12,415	34.9%	22.6%
2007	15,775	8,999	24,774	8,567	2,559	11,126	36.3%	23.0%
2008	18,133	15,911	34,044	9,215	3,699	12,913	46.7%	28.6%
2009	14,485	12,469	26,955	7,182	3,031	10,213	46.3%	29.7%
2010	19,279	14,250	33,529	9,258	3,489	12,747	42.5%	27.4%

Table Annex1-2 (continued). Harvests in aboriginal fisheries in Labrador and by Salmon Fishing Areas (SFA). There are no aboriginal fisheries in SFA 14B.

	By weight (kg)			By number			% Large	
Year	Small	Large	Total	Small	Large	Total	By weight	By number
SFA 1A (coastal Labrador)								
2000	4,184	2,359	6,543	2,111	599	2,709	36.0%	22.1%
2001	4,446	3,449	7,895	2,178	890	3,068	43.7%	29.0%
2002	4,997	2,769	7,766	2,431	661	3,092	35.7%	21.4%
2003	6,672	5,051	11,723	3,217	1,169	4,386	43.1%	26.7%
2004	6,709	4,720	11,429	3,255	1,165	4,419	41.3%	26.4%
2005	5,031	3,508	8,539	2,462	857	3,319	41.1%	25.8%
2006	4,945	4,072	9,017	2,360	1,060	3,419	45.2%	31.0%
2007	3,263	2,460	5,723	1,874	751	2,624	43.0%	28.6%
2008	5,086	7,562	12,649	2,533	1,752	4,285	59.8%	40.9%
2009	4,045	4,355	8,400	1,880	1,038	2,917	51.8%	35.6%
2010	3,241	3,629	6,870	1,472	822	2,294	52.8%	35.8%
SFA 1B (Lake Melville)								
2000	3,689	1,846	5,535	1,883	455	2,337	33.4%	19.5%
2001	2,261	1,549	3,810	1,081	382	1,463	40.7%	26.1%
2002	2,080	1,579	3,659	1,027	329	1,356	43.2%	24.3%
2003	2,023	1,703	3,725	966	399	1,365	45.7%	29.2%
2004	2,876	3,424	6,301	1,351	922	2,272	54.4%	40.6%
2005	4,361	2,807	7,167	2,154	674	2,828	39.2%	23.8%
2006	6,008	2,174	8,182	2,946	556	3,502	26.6%	15.9%
2007	4,646	2,796	7,442	2,641	794	3,435	37.6%	23.1%
2008	5,064	5,695	10,760	2,529	1,150	3,679	52.9%	31.3%
2009	3,885	3,663	7,549	1,962	814	2,776	48.5%	29.3%
2010	8,812	7,046	15,858	4,186	1,703	5,888	44.4%	28.9%
SFA 2								
2000								
2001								
2002								
2003								
2004	6,492	5,256	11,748	3,128	1,386	4,514	44.7%	30.7%
2005	9,830	3,691	13,520	4,899	1,058	5,957	27.3%	17.8%
2006	8,670	4,270	12,941	4,303	1,191	5,494	33.0%	21.7%
2007	7,867	3,742	11,609	4,052	1,014	5,066	32.2%	20.0%
2008	7,982	2,654	10,636	4,153	797	4,949	24.9%	16.1%
2009	6,555	4,451	11,006	3,340	1,180	4,520	40.4%	26.1%
2010	7,225	3,576	10,801	3,600	964	4,564	33.1%	21.1%

Table Annex1-3. Harvests in the resident food fisheries in Labrador and by Salmon Fishing Areas (SFA). There are no resident food fisheries in SFA 14B.

	By weight (kg)			By number			% Large	
Year	Small	Large	Total	Small	Large	Total	By weight	By number
Labrador								
2000	2,480	1,057	3,537	1,330	298	1,628	29.9%	18.3%
2001	3,082	1,501	4,583	1,530	449	1,979	32.8%	22.7%
2002	4,504	1,642	6,146	2,349	399	2,747	26.7%	14.5%
2003	4,502	2,157	6,659	2,294	608	2,902	32.4%	20.9%
2004	1,302	869	2,171	652	224	876	40.0%	25.6%
2005	1,817	871	2,688	921	228	1,150	32.4%	19.9%
2006	1,574	1,007	2,581	769	283	1,052	39.0%	26.9%
2007	1,294	388	1,682	640	93	734	23.1%	12.7%
2008	1,253	1,064	2,317	619	210	830	45.9%	25.3%
2009	1,644	1,212	2,856	806	313	1,119	42.4%	28.0%
2010	1,423	843	2,266	739	250	990	37.2%	25.3%

Table Annex1-3 (continued). Harvests in the resident food fisheries in Labrador and by Salmon Fishing Areas (SFA). There are no resident food fisheries in SFA 14B.

	By weight (kg)			By number			% Large	
Year	Small	Large	Total	Small	Large	Total	By weight	By number
SFA 1A (coastal Labrador)								
2000			0			0		
2001			0			0		
2002			0			0		
2003			0			0		
2004	13	9	22	6	2	8	39.2%	25.0%
2005	13	9	22	6	2	8	39.2%	25.0%
2006	13	9	22	6	2	8	39.2%	25.0%
2007	0	0	0	0	0	0		
2008	20	247	267	4	24	28	92.5%	85.7%
2009	0	0	0	0	0	0		
2010	14	6	20	7	1	8	30.0%	13.0%
SFA 1B (Lake Melville)								
2000	238	160	398	118	38	156	40.2%	24.4%
2001	288	123	411	135	27	161	29.9%	16.5%
2002	309	93	402	152	24	176	23.1%	13.9%
2003	400	272	672	199	71	270	40.5%	26.4%
2004	453	511	964	216	124	340	53.0%	36.4%
2005	725	615	1,340	342	156	498	45.9%	31.3%
2006	236	84	320	117	23	140	26.3%	16.5%
2007	397	57	454	186	15	201	12.6%	7.7%
2008	191	369	560	92	53	145	65.9%	36.6%
2009	243	213	456	122	56	178	46.7%	31.5%
2010	616	467	1,082	299	145	444	43.1%	32.7%
SFA 2								
2000	2,242	897	3,139	1,212	260	1,472	28.6%	17.7%
2001	2,793	1,378	4,172	1,396	422	1,818	33.0%	23.2%
2002	4,196	1,549	5,745	2,197	374	2,571	27.0%	14.6%
2003	4,102	1,885	5,987	2,095	536	2,632	31.5%	20.4%
2004	849	358	1,207	436	100	536	29.6%	18.7%
2005	1092	255	1,347	579	72	652	18.9%	11.1%
2006	1338	922	2,260	652	260	912	40.8%	28.5%
2007	897	331	1,228	455	78	533	26.9%	14.6%
2008	1,062	695	1,757	528	157	685	39.6%	22.9%
2009	1,401	998	2,400	684	257	941	41.6%	27.3%
2010	808	376	1,184	441	105	546	31.8%	19.3%

Table Annex1-4. Recreational fisheries catches and harvests in Labrador and by Salmon Fishing Areas.

	Small salmon			Large salmon			% Large
Year	Retained	Released	Total	Retained	Released	Total	Retained
Labrador							
2000	2,561	7,095	9,656	262	1,446	1,708	9.3%
2001	2,049	4,640	6,689	338	1,468	1,806	14.2%
2002	2,071	5,052	7,123	207	978	1,185	9.1%
2003	2,112	4,924	7,036	222	1,326	1,548	9.5%
2004	1,808	5,968	7,776	259	1,519	1,778	12.5%
2005	2,007	7,120	9,127	291	1,290	1,581	12.7%
2006	1,656	5,815	7,471	227	1,133	1,360	12.1%
2007	1,762	4,641	6,393	235	1,222	1,457	11.8%
2008	1,688	4,650	6,338	231	1,145	1,376	12.0%
2009	1,355	3,396	4,751	216	1,219	1,435	13.7%
2010	1,375	4,081	5,456	200	1,020	1,220	12.7%

Table Annex1-4 (continued). Recreational fisheries catches and harvests in Labrador and by Salmon Fishing Areas.

	Small salmon			Large salmon			% Large
Year	Retained	Released	Total	Retained	Released	Total	Retained
SFA 1							
2000	363	801	1,164	79	232	311	17.9%
2001	352	681	1,033	75	130	205	17.6%
2002	129	482	611	28	140	168	17.8%
2003	174	777	951	36	633	669	17.1%
2004	116	1,152	1,268	24	582	606	17.1%
2005	192	1,044	1,236	36	192	228	15.8%
2006	170	1,156	1,326	28	357	385	14.1%
2007	185	1,286	1,461	36	240	276	16.3%
2008	153	890	1,043	34	438	472	18.2%
2009	207	877	1,084	48	347	395	18.8%
2010	205	1,010	1,215	50	261	311	19.6%

	Small salmon			Large salmon			% Large
Year	Retained	Released	Total	Retained	Released	Total	Retained
SFA 2							
2000	1,480	4,169	5,649	183	461	644	11.0%
2001	1,151	2,984	4,135	263	891	1154	18.6%
2002	1,328	3,050	4,378	179	377	556	11.9%
2003	1,274	3,022	4,296	186	398	584	12.7%
2004	1,228	3,836	5,064	235	698	933	16.1%
2005	1,377	4,273	5,650	255	574	829	15.6%
2006	977	3,258	4,235	199	395	594	16.9%
2007	1,088	2,492	3,580	199	385	584	15.5%
2008	1,075	2,483	3,558	197	365	562	15.5%
2009	927	1,952	2,879	168	622	790	15.3%
2010	862	2,337	3,199	150	516	666	14.8%

	Small salmon			Large salmon			% Large
Year	Retained	Released	Total	Retained	Released	Total	Retained
SFA 14B							
2000	718	2,125	2,843	0	753	753	0.0%
2001	546	975	1,521	0	447	447	0.0%
2002	614	1,520	2,134	0	461	461	0.0%
2003	664	1,125	1,789	0	295	295	0.0%
2004	464	980	1,444	0	239	239	0.0%
2005	438	1,803	2,241	0	524	524	0.0%
2006	509	1,401	1,910	0	381	381	0.0%
2007	489	863	1,352	0	597	597	0.0%
2008	460	1,277	1,737	0	342	342	0.0%
2009	221	567	788	0	250	250	0.0%
2010	308	734	1,042	0	243	243	0.0%

Annex 7

CNL(11)10

Request for Scientific Advice from ICES

1. With respect to Atlantic salmon in the North Atlantic area:

1.1 provide an overview of salmon catches and landings, including unreported catches by country and catch and release, and production of farmed and ranched Atlantic salmon in 2011[1];
1.2 report on significant new or emerging threats to, or opportunities for, salmon conservation and management[2];
1.3 provide a review of examples of successes and failures in wild salmon restoration and rehabilitation and develop a classification of activities which could be recommended under various conditions or threats to the persistence of populations;
1.4 provide a compilation of tag releases by country in 2011;
1.5 identify relevant data deficiencies, monitoring needs and research requirements.

2. With respect to Atlantic salmon in the North-East Atlantic Commission area:

2.1 describe the key events of the 2011 fisheries[3];
2.2 review and report on the development of age-specific stock conservation limits;
2.3 describe the status of the stocks;
2.4 provide catch options or alternative management advice for 2012-2015, with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[4];
2.5 further develop a risk-based framework for the provision of catch advice for the Faroese salmon fishery, providing a clear indication of the management decisions required for implementation;
2.6 further develop a framework of indicators that could be used to identify any significant change in the assessments used in previously provided multi-annual management advice;
2.7 provide advice on best practice for conducting monitoring surveys for the parasite *Gyrodactylus salaris.*

3. With respect to Atlantic salmon in the North American Commission area:

3.1 describe the key events of the 2011 fisheries (including the fishery at St Pierre and Miquelon)[3];
3.2 update age-specific stock conservation limits based on new information as available;
3.3 describe the status of the stocks;
3.4 provide catch options or alternative management advice for 2012-2015 with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[4].

4. With respect to Atlantic salmon in the West Greenland Commission area:

4.1 describe the key events of the 2011 fisheries[3];
4.2 describe the status of the stocks[5];

4.3 provide catch options or alternative management advice for 2012-2014 with an assessment of risk relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[4];

4.4 update the framework of indicators used to identify any significant change in the previously provided multi-annual management advice;

4.5 advise on possible explanations for the variations in fishing patterns (e.g. effort, licenses and landings) observed in the Greenland fishery in recent years.

Notes:

1. *With regard to question 1.1, for the estimates of unreported catch the information provided should, where possible, indicate the location of the unreported catch in the following categories: in-river; estuarine; and coastal. Numbers of salmon caught and released in recreational fisheries should be provided.*
2. *With regard to question 1.2, ICES is requested to include reports on any significant advances in understanding of the biology of Atlantic salmon that is pertinent to NASCO, including information on any new research into the migration and distribution of salmon at sea and the potential implications of climate change for salmon management.*
3. *In the responses to questions 2.1, 3.1 and 4.1, ICES is asked to provide details of catch, gear, effort, composition and origin of the catch and rates of exploitation. For homewater fisheries, the information provided should indicate the location of the catch in the following categories: in-river; estuarine; and coastal. Any new information on non-catch fishing mortality of the salmon gear used, on the by-catch of other species in salmon gear, and on the by-catch of salmon in any existing and new fisheries for other species is also requested.*
4. *In response to questions 2.4, 3.4 and 4.3, provide a detailed explanation and critical examination of any changes to the models used to provide catch advice and report on any developments in relation to incorporating environmental variables in these models.*
5. *In response to question 4.2, ICES is requested to provide a brief summary of the status of North American and North-East Atlantic salmon stocks. The detailed information on the status of these stocks should be provided in response to questions 2.3 and 3.3.*

Annex 8

List of North American Commission Papers

NAC(11)0	List of papers
NAC(11)1	Provisional Agenda
NAC(11)2	Draft Agenda
NAC(11)3	NAC Annual Report 2010 (Tabled by the US)
NAC(11)4	Report of the Labrador Atlantic Salmon Fisheries And Sampling Program
NAC(11)5	Draft Report of the Twenty-Eighth Annual Meeting of the North American Commission
NAC(11)6	NAC Annual Report 2010 (Tabled by Canada)
NAC(11)7	Agenda
NAC(11)8	Report of the Twenty-Eighth Annual Meeting of the North American Commission
NAC(11)9	ICES Presentation to the North American Commission

REPORT OF THE

TWENTY-EIGHTH ANNUAL MEETING

OF THE

NORTH-EAST ATLANTIC COMMISSION

4 – 6 JUNE 2011
Ilulissat, Greenland

Chairman:	Mr Raoul Bierach (Norway)
Vice-Chairman:	Dr Ciaran Byrne (European Union)
Rapporteur:	Mr Manson Wright (European Union)
Secretary:	Dr Malcolm Windsor

NEA(11)8

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NEA(11)8

Report of the Twenty-Eighth Annual Meeting of the North-East Atlantic Commission

Hotel Arctic, Ilulissat, Greenland

4 - 6 June, 2011

1. Opening of the Meeting

1.1 The Chairman, Mr Raoul Bierach (Norway), opened the meeting and welcomed participants to the Twenty-Eighth Annual Meeting of the Commission.

1.2 An opening statement was made on behalf of the Non-Government Organizations (NGOs) attending the Annual Meeting (Annex 1).

1.3 A list of participants at the Twenty-Eighth Annual Meeting of the Council and Commissions is included on page 171 of this document.

2. Adoption of the Agenda

2.1 The Commission adopted its agenda, NEA(11)6 (Annex 2).

3. Nomination of a Rapporteur

3.1 Mr Manson Wright (European Union) was appointed as Rapporteur for the meeting.

4. Review of the 2010 Fishery and ACOM Report from ICES on Salmon Stocks in the Commission Area

4.1 The representative of ICES, Mr Gérald Chaput, presented the scientific advice on salmon stocks relevant to the North-East Atlantic Commission, CNL(11)8. His presentation is available as document NEA(11)11. The Advisory Committee (ACOM) report from ICES, which contains the scientific advice relevant to all Commissions, is included on page 119 of this document.

5. Progress with development of a Risk Framework for the Faroese Fishery

5.1 At the Commission's Twenty-Sixth Annual Meeting, the Chairman had noted that ICES had been unable to make progress in developing quantitative catch advice because the Commission had not agreed explicit management objectives for provision of catch advice for the Faroese fishery and there is no pre-agreed sharing agreement among NASCO Parties. ICES had been requested to provide, for the Commission's 2010 Annual Meeting, an assessment of the issues that would need to be resolved before they could provide quantitative catch advice. The advice from ICES had been discussed at the Commission's 2010 Annual Meeting and, while no consensus was

reached, it was agreed to try to progress this matter inter-sessionally. In this regard, the Chairman had written to the members of the Commission seeking feedback on the following three questions:

1) Do the Parties agree that stocks at the country/region level be defined as the management units for the purpose of developing a risk framework for providing quantitative catch advice for the Faroese fishery, or are there alternative proposals?

2) Do the Parties agree that the management objectives used in developing a risk framework for providing quantitative catch advice for the Faroese fishery should be that there is a 75% probability of simultaneously achieving the conservation limits for each of these management units, or are there alternative proposals?

3) Do the Parties agree that the allocation of any harvestable surplus used in developing a risk framework for providing quantitative catch advice for the Faroese fishery should be on the basis of the average share of catches harvested at Faroes and in homewater fisheries during the period 1986 - 1990, or are there alternative proposals?

5.2 The responses to these three questions are contained in document NEA(11)3 (Annex 3), which was introduced by the Chairman. In summary, the EU, Norway and the Russian Federation could agree to the proposals made in questions 2 and 3. With regard to question 1, Norway and Russia had indicated that the four regions used within each of these countries to calculate pre-fishery abundance could be used as management units for the purpose of developing a risk framework. The EU had noted that it was important that the selection of management units respect the application of the Precautionary Approach rather than the large stock complexes currently used, which ICES indicated could mask changes in a substantial proportion of stocks. The EU, therefore, proposed that ICES be requested to provide a more detailed evaluation of the appropriate choice of management units including, if possible, worked examples of catch advice. This was accepted by the Commission, which had further asked that ICES: 'provide a more detailed evaluation of the choice of appropriate management units to be used in a risk-based framework for the provision of catch advice for the Faroese salmon fishery, taking into account relevant biological and management considerations and including, if possible, worked examples of catch advice'. The response from ICES is contained in Section 10.1.12 of the ACOM advice, CNL(11)8.

5.3 The representative of Norway tabled document NEA(11)5 (Annex 4) which described a possible management approach, in flow chart format, to facilitate the establishment of multi-annual measures for the Faroese salmon fishery. It was noted that there would be a need for further advice from ICES and decisions by NASCO before further progress could be made. In the event that the risk analysis was based on management units comprising large numbers of river stocks (jurisdiction or stock complex level), ICES had proposed that an additional management objective should also be applied at a smaller geographical scale. This objective might state that an agreed percentage of the assessed river stocks within each of the smaller geographic units must meet specified management objectives. The representative of ICES

indicated that without advice from managers on the management objectives and an appropriate sharing arrangement, ICES would provide quantitative catch advice based on agreed objectives for other Commission areas of NASCO. The representative of the NGOs indicated that mixed stock fisheries pose particular risks to the wild stocks and questioned why the Commission was discussing a possible quota at this time. The representative of the European Union indicated that this was a complex matter but there was a need to have a mechanism in place to set quotas in the event that the advice indicated that there was a harvestable surplus at some time in the future. The Commission agreed, therefore, that it should ask that ICES further develop both the Framework of Indicators and the Risk Framework and report to the 2012 meeting of the Commission so that there could be further discussions on this matter at that time.

6. Regulatory Measures

6.1 The Chairman noted that at the 2010 Annual Meeting, a Decision was adopted regarding the salmon fishery in Faroese waters in 2011, NEA(10)8. Under this Decision the Commission decided not to set a quota but noted that the Faroe Islands would manage any fishery on the basis of the ICES advice and in a precautionary manner. He noted that although the Faroe Islands were not represented at the meeting, they had indicated that they could support a roll-over of the decision in 2012.

6.2 The Chairman circulated a Draft Decision regarding the salmon fishery in Faroese waters in 2012, NEA(11)4. The Commission adopted this Decision, NEA(11)10 (Annex 5) on the assumption that the Faroe Islands would again manage any fishery on the basis of the ICES advice and in a precautionary manner.

6.3 In 2009, an informal consultation meeting of the Parties had been held concerning Norwegian coastal fisheries (see NEA(09)3) and a further process of cooperation between Norway, the Russian Federation and the EU had been agreed. The representative of Norway indicated that, in 2010, the pre-fishery abundance of salmon in Norway had been at historically low levels but escapement had been maintained at adequate levels in most rivers. He noted that for 2011 there would be no change in the fishery regulations compared to 2010. In 2011, responsibility for regulation of the salmon fisheries in rivers had been transferred from the County Governors' Offices to the Directorate for Nature Management and that 2011 would, therefore, be a transitional year. There would be a more complete review of the regulations in 2012 and dialogue with the Russian Federation and affected EU Member States would continue in future.

7. Risk of Transmission of *Gyrodactylus salaris* in the Commission Area

7.1 The Chairman indicated that, at its 2008 Annual Meeting, the Commission had considered a report from its Working Group on *G.salaris* in the North-East Atlantic Commission area, NEA(08)3. While the Working Group had not met since 2008, the Commission had agreed to retain an agenda item on this issue so as to monitor developments in relation to the parasite.

7.2 The representative of Norway indicated that rotenone treatments of infected rivers are being conducted in order to eradicate the parasite. Of a total of 48 infected rivers, 21

rivers have been declared free of the parasite after successful treatment. An additional 5 rivers are being monitored for a period of five years after treatment before they can be declared free from the parasite. 22 rivers are still infected with *G.salaris*. She noted that there are 10 infected rivers in the Vefsna region of northern Norway, which were scheduled to be treated in 2010 and 2011. However, *G.salaris* was found on Arctic char in Lake Fustvatnet. In 2010, an extensive survey was carried out to determine the prevalence of *G.salaris* on Arctic char in the distribution area of Atlantic salmon in this region and the parasite was found on Arctic char in a total of three lakes located in the same catchment area. Lake Fustvatnet is the largest lake, and a water body of this size has not previously been treated with rotenone. She advised the Commission that survey results had indicated that it would be feasible to treat the lake if it is carried out before the fall turnover. The Norwegian authorities, therefore, plan to carry out rotenone treatments of all 10 infected rivers and 3 lakes in the Vefsna region during 2011 and 2012 subject to approval from the Parliament. The total budget for this project is NOK120 million ($20 million).

7.3 The representative of Norway indicated that in 2011 and 2012 new attempts will be made to eliminate *G.salaris* by the use of acid aluminium in the River Lærdalselva. In the river Driva, in central Norway, salmon can migrate 90 km upstream. To reduce the distance to be treated with rotenone, a barrier will be constructed 30 km from the sea. The engineering phase of this barrier commenced last year with construction in 2012/2013. In the Rauma region, which contains 4 infected rivers, mapping and planning are being undertaken with the aim of conducting rotenone treatments in 2013 and 2014.

8. Announcement of the Tag Return Incentive Scheme Prize

8.1 The Chairman announced that the draw for the North-East Atlantic Commission prize in the NASCO Tag Return Incentive Scheme was made by the Auditor on 12 May. The winning tag was of Norwegian origin and had been applied at the mouth of the Trondheim Fjord, on 5 June 2010. The tagged fish was recaptured in the River Gaula on 2 July. The winner of the Commission's prize was Mr Clas Bjørnsrud, Dal, Norway. The Commission offered its congratulations to the winner.

9. Recommendations to the Council on the Request to ICES for Scientific Advice

9.1 The Commission agreed the request for scientific advice from ICES prepared by the Standing Scientific Committee in relation to the North-East Atlantic Commission area. The request to ICES, as agreed by the Council, is contained in document CNL(11)10 (Annex 6).

10. Other Business

10.1 There was no other business.

11. Date and Place of the Next Meeting

11.1 The Commission agreed to hold its next meeting during the Twenty-Ninth Annual Meeting of the Council.

12. Report of the Meeting

12.1 The Commission agreed a report of its meeting.

Note: The annexes mentioned above begin on page 61, following the French translation of the report of the meeting. A list of North-East Atlantic Commission papers is included in Annex 7.

NEA(11)8

Compte rendu de la Vingt-huitième réunion annuelle de la Commission de l'Atlantique du Nord-Est de l'Organisation pour la Conservation du Saumon de l'Atlantique Nord

Hôtel Arctic, Ilulissat, Groenland

4 - 6 juin, 2011

1. Ouverture de la réunion

1.1 Le Président, M. Raoul Bierach (Norvège), a ouvert la réunion et a souhaité la bienvenue aux délégués à la Vingt-huitième réunion annuelle de la Commission.

1.2 Une déclaration d'ouverture a été prononcée conjointement au nom des Organisations non gouvernementales (ONG) présentes à la Réunion annuelle (annexe 1).

1.3 La liste des participants à la Vingt-huitième réunion annuelle du Conseil et des Commissions de l'OCSAN figure à la page 171 de ce document.

2. Adoption de l'ordre du jour

2.1 La Commission a adopté son ordre du jour, NEA(11)6 (annexe 2).

3. Nomination d'un Rapporteur

3.1 La Commission a nommé M. Manson Wright (Union européenne) Rapporteur de la réunion.

4. Examen de la pêcherie de 2010 et du rapport du Comité Consultatif (ACOM) du CIEM sur les stocks de saumons dans la zone de la Commission

4.1 Le représentant du CIEM, M. Gerald Chaput, a présenté les recommandations scientifiques à propos des stocks de saumons qui intéressent la Commission de l'Atlantique du Nord-Est, CNL(11)8. Sa présentation est reproduite dans le document NEA(11)11. Le rapport de l'ACOM du CIEM, qui renferme les recommandations scientifiques pour l'ensemble des Commissions, figure à la page 119 de ce présent document.

5. Progrès dans l'élaboration d'un cadre des risques concernant la pêcherie féringienne

5.1 Lors de la Vingt-sixième réunion annuelle de la Commission, le Président avait noté qu'il avait été impossible au CIEM de progresser dans l'élaboration de recommandations quantitatives de captures pour la pêcherie féringienne, car la Commission n'avait pas convenu explicitement d'objectifs de gestion. De plus, il

n'existait aucun accord préalable entre les Parties de l'OCSAN. On avait demandé au CIEM de fournir, à temps pour la Réunion annuelle de 2010 de la Commission, une évaluation des questions à résoudre avant qu'ils ne puissent proposer des recommandations quantitatives de captures. Les recommandations du CIEM avaient été soumises à un débat lors de la Réunion annuelle de 2010 de la Commission. Malgré le manque de consensus, on avait convenu d'essayer de faire progresser cette question au cours de réunions intermédiaires. À ce propos, le Président avait écrit aux membres de la Commission pour obtenir leur feedback sur les trois questions suivantes :

1) Les Parties consentent-elles à ce que les stocks (à l'échelle d'un pays/d'une région donné) soient établis comme unités de gestion dans le but de mettre au point un cadre des risques – ce cadre permettant de fournir des recommandations quantitatives de captures pour la pêcherie féringienne, ou existe-t-il d'autres propositions ?

2) Les Parties acceptent-elles que les objectifs de gestion (employés pour élaborer un cadre des risques permettant de formuler des recommandations quantitatives de captures pour la pêcherie féringienne) consistent à ce qu'il y ait 75% des chances d'atteindre simultanément les limites de conservation pour chacune de ces unités de gestion, ou existe-t-il d'autres propositions ?

3) Les Parties conviennent-elles que l'allocation de tout surplus récoltable (employé pour établir un cadre des risques permettant de fournir des recommandations quantitatives de captures pour la pêcherie féringienne) devrait s'effectuer selon la moyenne du partage des captures récoltées aux Iles Féroé et dans les pêcheries territoriales pendant la période de 1986 à 1990, ou existe-t-il d'autres propositions ?

5.2 Le réponses à ces trois questions figurent dans le document NEA(11)3 (annexe 3), présenté par le Président. En résumé, l'UE, la Norvège et la Fédération de la Russie seraient disposées à accepter les propositions avancées dans les questions 2 et 3. En ce qui concernait la question 1, la Norvège et la Russie avaient indiqué que les quatre régions utilisées au sein de chacun de ces pays pour calculer l'abondance pré-pêche pourraient être employées comme unités de gestion dans l'élaboration du cadre des risques. L'UE avait fait remarquer qu'il importait de choisir des unités de gestion en accord avec l'application de l'approche préventive plutôt que d'avoir recours aux vastes complexes de stocks tels qu'ils étaient employés actuellement et qui, selon le CIEM pourraient masquer des modifications chez une grande proportion des stocks. De ce fait, l'UE avait proposé de demander au CIEM de fournir une évaluation plus détaillée des choix d'unités de gestion appropriés dont, si possible, des exemples réels de recommandations de captures. Ceci a été accepté par la Commission qui avait prié le CIEM "de fournir une évaluation supplémentaire et plus précise des choix d'unités de gestion appropriées auxquels on aurait recours pour élaborer un cadre, à la formulation de recommandations de captures, basé sur les risques. Cette évaluation devait tenir compte des considérations biologiques et de gestion et inclure, dans la mesure du possible, des exemples réels de recommandations de capture ». La section 10.1.12 des recommandations de l'ACOM renferme la réponse du CIEM, CNL(11)8.

5.3 Le représentant de la Norvège a présenté le document NEA(11)5 (annexe 4). Ce document décrivait, par le biais d'un organigramme, une approche de gestion qui pourrait faciliter l'établissement de mesures pluriannuelles à appliquer à la pêcherie féringienne du saumon. On a noté qu'il était nécessaire d'obtenir des recommandations supplémentaires de la part du CIEM et que l'OCSAN devait prendre certaines décisions avant de pouvoir progresser plus dans ce domaine. À supposer que l'on fonde l'analyse des risques sur des unités de gestion composées d'un grand nombre de stocks de rivières (au niveau de la juridiction ou de complexe de stock), le CIEM avait proposé d'appliquer un objectif de gestion supplémentaire à une échelle géographique plus restreinte. Cet objectif pourrait exiger qu'un certain pourcentage des stocks de rivières surveillés, au sein de chacune des plus petites unités géographiques, satisfasse des objectifs de gestion donnés. Le représentant du CIEM a indiqué que, faute d'un avis des gestionnaires sur les objectifs de gestion et faute d'un accord de partage approprié, le CIEM fournirait des recommandations quantitatives de captures basées sur les accords d'objectifs des autres zones de Commission de l'OCSAN. Le représentant des ONG a indiqué que les pêcheries de stocks mixtes posaient des risques particuliers aux stocks de saumons sauvages. Il se demandait par conséquent pourquoi la Commission débattait de la possibilité d'un quota à ce moment donné. Le représentant de l'Union européenne a répondu qu'il s'agissait d'une question complexe mais qu'il était nécessaire d'avoir un mécanisme en place pour fixer les quotas au cas où les recommandations indiqueraient à l'avenir qu'un surplus récoltable existait. La Commission a, par conséquent, convenu de demander au CIEM de rendre compte à la réunion de la Commission de 2012 de l'amélioration qu'il aurait apporté au cadre des Indicateurs et au cadre des risques, ce qui permettrait alors relancer le débat sur la question.

6. Mesures de réglementation

6.1 Le Président a rappelé que, l'année dernière, une décision avait été prise concernant la pêcherie de saumons dans les eaux féringiennes en 2011, NEA(10)8. Conformément à cette Décision, la Commission avait décidé de ne pas fixer de quota mais avait pris note que les Îles Féroé gèreraient toute pêcherie selon les conseils du CIEM et d'une manière préventive. Il a fait remarquer que, même si les Iles Féroé n'étaient pas représentées à la réunion, elles avaient indiqué qu'elles seraient en mesure d'appuyer un renouvellement de la décision en 2012.

6.2 Le Président a fait circuler un avant projet de prise de décision concernant la pêcherie de saumons dans les eaux féringiennes en 2012, (NEA(11)4). La Commission a adopté cette décision, NEA(11)10 (annexe 5) dans l'hypothèse que les Iles Féroé continueraient de gérer toute pêcherie selon les recommandations du CIEM et d'une manière préventive.

6.3 En 2009, une réunion informelle et consultative des Parties avait eu lieu à propos des pêcheries côtières norvégiennes (voir NEA(09)3). Un nouveau mécanisme de coopération entre la Norvège, la Fédération de la Russie et l'Union européenne avait également été conclu. Le représentant de la Norvège a indiqué qu'en 2010 l'abondance de saumons pré-pêche se trouvait au plus bas niveau de l'historique. On avait toutefois maintenu l'échappement de saumons à un niveau acceptable dans la majorité des rivières. Il a fait remarquer qu'il n'y aurait aucune modification des

règlements de pêche en 2011 par rapport à 2010. La responsabilité de réglementation des pêcheries de saumons sera transférée en 2011 des bureaux du Gouverneur du Conté à la Direction pour la gestion de la nature. L'année 2011 représenterait, par conséquent, une année de transition. Il y aurait une révision plus complète de la réglementation en 2012. Le dialogue avec la Fédération de Russie et les Etats membres concernés de l'UE sera maintenu.

7. Risque de Transmission du *Gyrodactylus salaris* dans la zone de la Commission

7.1 Le Président a indiqué qu'au cours de sa réunion annuelle de 2008, la Commission avait étudié un rapport de son Groupe de Travail chargé de la question du *G.Salaris* dans la zone de la Commission de l'Atlantique du Nord-Est, NEA(08)3. Bien que le Groupe de Travail ne se soit pas réuni depuis 2008, la Commission avait convenu de conserver cette question à l'ordre du jour, et ce, afin de surveiller l'évolution de la situation en ce qui concernait le parasite.

7.2 La représentante de la Norvège a indiqué qu'afin de détruire le parasite, un traitement à la roténone des rivières infectées était en cours. Suite à une réussite du traitement, 21 rivières, sur un total de 48 rivières touchées, ont été déclarées exemptes du parasite. Cinq autres rivières sont sous surveillance pour une durée de cinq ans après avoir été traitées et avant de pouvoir être déclarées complètement dégagées du parasite. Il restait encore 22 rivières infectées par le *G.salaris*. La représentante de la Norvège a ajouté qu'il y avait 10 rivières infectées dans la région de Vefsna au nord de la Norvège. Leur traitement avait été programmé pour 2010 et 2011. Cependant, on avait détecté le *G.salaris* sur l'omble chevalier dans le lac Fustvatnet. En 2010, on avait conduit une étude approfondie pour déterminer la prévalence du *G.salaris* sur l'omble chevalier dans la zone de distribution du saumon atlantique dans cette région. On en a trouvé dans un total de trois lacs situés dans le même bassin hydrographique. Le lac Fustvatnet est le plus étendu de ces lacs, et une étendue d'eau de cette surface n'avait jamais été traitée auparavant à la roténone. La représentante de la Norvège a informé la Commission que les conclusions d'une étude avaient indiqué qu'il serait faisable de traiter le lac, du moment que ceci soit effectué avant le brassage des eaux de l'automne. Par conséquent, les autorités norvégiennes envisageaient d'effectuer les traitements à la roténone de l'ensemble des dix rivières et des trois lacs infectés de la région de Vefsna au cours des années 2011 et 2012, sous réserve d'une approbation du Parlement. La totalité du budget pour ce projet s'élève à 120 millions de NOK (soit 20 millions de dollars US).

7.3 La représentante de la Norvège a indiqué que de nouvelles tentatives d'éradication du *G.salaris* par l'utilisation d'acide aluminium seront effectuées en 2011 et 2012 dans la rivière Lærdalselva. Dans la rivière Driva, au centre de la Norvège, le saumon peut migrer jusqu'à 90 kms en amont. Afin de réduire la distance à traiter à la roténone, on y construira une barrière à 30 km de la mer. La phase d'études techniques de cette barrière avait débuté l'année dernière et la construction devait avoir lieu en 2012/2013. Dans la région Rauma, qui renferme 4 rivières touchées par le parasite, la cartographie des lieux et la planification du traitement étaient en cours, l'objectif étant d'effectuer les traitements à la roténone en 2013 et 2014.

8. Annonce du prix du programme d'encouragement au renvoi des marques

8.1 Le Président a annoncé que le tirage au sort du prix de la Commission de l'Atlantique du Nord-Est du Programme d'encouragement au renvoi des marques de l'OCSAN a été effectué par le Commissaire aux comptes le 12 mai. La marque gagnante était d'origine norvégienne. Elle avait été appliquée à l'embouchure du Fjord de Trondheim, le 5 juin 2010. Le poisson marqué a été re-capturé dans la rivière Gaula le 2 juillet. M. Clas Bjørnsrud, de Dal en Norvège, a remporté le prix de la Commission. La Commission a félicité le gagnant.

9. Recommandations au Conseil dans le cadre de l'avis scientifique émanant du CIEM

9.1 La Commission a accepté la demande au CIEM de recommandations scientifiques, telle qu'elle avait été préparée par le Comité Scientifique Permanent pour la zone de la Commission de l'Atlantique du Nord-Est. La demande de recommandations scientifiques au CIEM, approuvée par le Conseil, figure dans le document CNL(11)10 (annexe 6).

10. Divers

10.1 Aucune autre question n'a été traitée

11. Date et lieu de la prochaine réunion

11.1 La Commission a convenu de tenir sa prochaine réunion pendant la Vingt-neuvième réunion du Conseil.

12. Compte rendu de la réunion

12.1 La Commission a accepté le compte rendu de la réunion.

Note : Les annexes mentionnées ci-dessus commencent à la page 61. Une liste des documents de la Commission de l'Atlantique du Nord-Est figure à l'annexe 7.

Annex 1

Joint NGO Opening Statement to the North-East Atlantic Commission

I am pleased to present the joint opening statement on behalf of the NGO Group.

NGOs still have serious concerns about the management and conservation of wild Atlantic salmon in the North-East Atlantic, and the commitment of Parties to take the robust decisions necessary to protect this iconic natural resource. Our concerns mirror those contained within the ICES report, which annually draws NASCO's attention to the following issues, and yet we still continue, year after year, to find ourselves bemoaning the lack of action by Parties to address them.

While Greenland and the Faroes continue to refrain from resuming commercial fishing, Norway, Scotland and England all prosecute significant home-water mixed-stock fisheries, in contradiction of all best scientific advice, killing tens of thousands of salmon that were initially saved from exploitation on their marine feeding grounds. Even in Ireland, where the drift net fishery was closed in 2006 on conservation grounds, the Castlemaine mixed-stock fishery is set to reopen this year, despite a lack of robust scientific evidence that all impacted stocks are protected at or above their conservation limits, so flying in the face of the Precautionary Principle.

This remains a constant frustration for NGOs, who see an underlying lack of fairness compared with the sacrifices made in distant-water fisheries. NASCO should, in our view, enable a consistent international approach to fisheries management, yet we continually hear excuses as to why more robust action is not politically expedient within individual countries supporting mixed-stock netting. It is patently obvious to NGOs that if Greenland and Faroes finally lose patience with this policy imbalance and decide to re-open commercial fisheries, which is still their right, then the impact on home-water fisheries will be significant, jeopardising salmon populations within many river systems. Once again, therefore, NGOs urge Parties in the strongest possible terms to phase-out coastal mixed-stock fisheries under their jurisdiction, otherwise failure to achieve this will undermine the very basis of NASCO's principle conservation objective.

We see a similar lack of political commitment to regulate salmon farming in the NEAC region, with Norway, Scotland and Ireland all having significant problems in controlling both sea lice numbers and escapes. This is despite the Liaison Group's agreed Best Management Practice (BMP) Guidelines for targets of zero escapes, and for the health of wild salmon in the vicinity of fish farms to be no worse than that where farms are absent. Peer reviewed scientific evidence across the entire North Atlantic region indicates that there is a severe threat to the survival of the Atlantic salmon stocks from the impacts of introgression of farmed genes on wild populations and from parasites and diseases emanating from salmon farm units, far above natural levels.

Indeed, there are still fish farming representatives that agreed the BMP Guidelines, only to return home for their organisations to promptly deny any impact on wild Atlantic salmon. Were this to be otherwise, and the industry accept that there are indeed impacts on wild salmon stocks, then a genuinely open dialogue can proceed towards actions that protect wild salmonids. Fortunately, Government scientists are not so reticent, as in Scotland, for

instance, Marine Scotland Science personnel now warn local planning authorities of the potential for salmon farms to impact wild salmonids, and they have their own peer reviewed papers to back up their position. NGOs urge Parties to act more robustly towards the eradication of sea lice impacts, escapes and the other impacts from salmon farming, and for the industry to meet its moral obligations to protect the natural environment which it exploits for its own benefit.

NGOs remain concerned at the continuing threat posed by *Gyrodactylus salaris* and urge retention of this topic as a standing item on this Commission's agenda.

Although Baltic salmon is outside the NASCO forum, its management could benefit from objectives and practices developed within NASCO, such as the setting of conservation limits for individual rivers. We believe that NASCO should provide its experience to the Baltic salmon management plan, now being developed within the EU.

Annex 2

NEA(11)6

Agenda

1. Opening of the Meeting
2. Adoption of the Agenda
3. Nomination of a Rapporteur
4. Review of the 2010 Fishery and ACOM Report from ICES on Salmon Stocks in the Commission Area
5. Progress with development of a Risk Framework for the Faroese Fishery
6. Regulatory Measures
7. Risk of Transmission of *Gyrodactylus salaris* in the Commission Area
8. Announcement of the Tag Return Incentive Scheme Prize
9. Recommendations to the Council on the Request to ICES for Scientific Advice
10. Other Business
11. Date and Place of the Next Meeting
12. Report of the Meeting

Annex 3

NEA(11)3

Development of a Risk Framework for Providing Catch Advice for the Faroese Salmon Fishery

1. In order to progress the development of a risk framework for providing catch advice for the Faroese salmon fishery, ICES was requested to provide for the Commission's 2010 Annual Meeting an assessment of the issues that would need to be resolved before they could provide quantitative catch advice. The response was presented in the report of the ICES ACOM, CNL(10)8, and indicated that ICES would require feedback from the Commission on the management units to be employed; the management objectives for each unit and a sharing agreement.

2. This advice from ICES was discussed at the Commission's 2010 Annual Meeting and, while no consensus was reached, it was agreed to try to progress this matter inter-sessionally. In this regard, the Chairman of the Commission, Raoul Bierach, wrote to the members of the Commission on 1 October 2010 seeking feedback on the following three questions:

    1) Do the Parties agree that stocks at the country/region level be defined as the management units for the purpose of developing a risk framework for providing quantitative catch advice for the Faroese fishery, or are there alternative proposals?;

    2) Do the Parties agree that the management objectives used in developing a risk framework for providing quantitative catch advice for the Faroese fishery should be that there is a 75% probability of simultaneously achieving the conservation limits for each of these management units, or are there alternative proposals?;

    3) Do the Parties agree that the allocation of any harvestable surplus used in developing a risk framework for providing quantitative catch advice for the Faroese fishery should be on the basis of the average share of catches harvested at Faroes and in homewater fisheries during the period 1986 - 1990, or are there alternative proposals?

3. The responses from the Parties are contained in Annex 1. In summary, the EU, Norway and the Russian Federation could agree to the proposals made in questions 2 and 3. With regard to question 1, Norway and Russia suggested that the four regions used within each of these countries to calculate pre-fishery abundance be used as management units for the purpose of developing a risk framework. The EU noted that it was important that the selection of management units respect the application of the Precautionary Approach rather than the large stock complexes currently used which ICES indicated could mask changes in a substantial proportion of stocks. The EU, therefore, proposed that ICES be requested to provide a more detailed evaluation of the appropriate choice of management units including, if possible, worked examples of catch advice.

4. This proposal was acceptable to the Commission which agreed on the following supplementary request to ICES:

"Provide a more detailed evaluation of the choice of appropriate management units to be used in a risk based framework for the provision of catch advice for the Faroese salmon fishery, taking into account relevant biological and management considerations and including, if possible, worked examples of catch advice"

5. It was recognised, in developing this request, that possible future management measures for the Faroese fishery should be addressed during the Annual Meeting rather than by correspondence and that the objective was to ensure that a sufficient scientific basis for management decisions was in place to inform those discussions. While the other Parties could accept the proposal that the allocation of any harvestable surplus used in developing a risk framework for providing catch advice for the Faroese salmon fishery should be based on the average share of catches harvested at Faroes during the period 1984 - 1990, the Faroese delegation considered that the period 1984 - 1988 would be more appropriate. ICES was accordingly advised of these different views regarding an appropriate period on which to base a sharing agreement in order that it could take them into account if it is able to develop worked examples of catch advice.

6. The response from ICES will be presented in the ACOM report for 2011, CNL(11)8, and the Commission will then be able to further discuss this issue under item 5 of its Agenda for our meeting in June.

Secretary
Edinburgh
7 April 2011

Responses by the Parties to the Chairman's Proposals regarding the Development of a Risk Framework for Providing Catch Advice for the Faroese Salmon Fishery

Denmark (in respect of the Faroe Islands)

The Faroe Islands can support your suggestion to forward the proposed question to ICES regarding the evaluation of appropriate management units to be used in a risk based framework for the provision of catch advice for the Faroese salmon fishery, including worked examples of catch advice. However such examples should be based on historical catches in the period 1984 to 1988 rather than 1986 to 1990 as suggested by ICES. In this early period the only limitation on the Faroese fishery was that the vessels had to operate inside the Faroese EEZ. Therefore this period would most likely reflect the "free" fishery in terms of natural catch rates, size/age distributions in the catches, fishing strategy and movement of the fleet during the fishing season. After this period an increasing number of limitations were imposed on the Faroese fishery, such as limiting number of fishing days, limiting number of vessel licenses, and quota limitations, all factors that are thought to bias the catch rates and therefore not reflect the share on a fair basis.

As stated in our email dated 24 November 2010, we do not wish to enter into detailed discussions about a risk framework for the Faroese salmon fishery through email correspondence.

For this reason we do not believe it is either possible or appropriate to give definitive answers to the management-related questions contained in your email of 8 December without the further evaluation of management units and their level of precision which is now being proposed to request from ICES.

We therefore look forward to a further response from ICES, after which we will hopefully be in a better position to assess how best to proceed with discussions on future approaches to management.

European Union

The EU broadly supports the approach proposed by ICES, as outlined in the letter from the chairman of NEAC. However, in relation to the specific questions:

1) The ACOM advice was least clear with regard to the establishment of appropriate management units, and we note that the country/regional units that ICES currently uses for the NEAC assessment were not established as units for providing catch advice. It is important that the selection of management units respects the application of the precautionary approach by taking into account the wide range of levels of conservation throughout the full range of NEAC, rather than the current large stock complexes which ICES has indicated could mask changes in a substantial proportion of stocks. But more work is required to establish the most appropriate units.

2) For the Management Objectives we agree that NEAC should follow the precedent of the WGC, which seeks to achieve the conservation limits simultaneously for each management unit at a probability level of greater than 75%. This provides for consistency in approach across the management regimes in NASCO.

3) Regarding the sharing arrangement, we agree that NEAC should adopt the same process for allocating the harvestable surplus as is used for West Greenland, and that the allocations be based on the average catches by weight for the period 1986 to1990.

We therefore suggest that NEAC accepts the proposals in para's 2 & 3, but request ICES to provide a more detailed evaluation of the choice of appropriate management units based on relevant biological and management considerations (e.g. EU River Basin Districts, etc), including, if possible, worked examples of catch advice for historic years.

Norway

We have the following comments to the questions:

1) *Do the Parties agree that stocks at the country/region level be defined as the management units for the purpose of developing a risk framework for providing quantitative catch advice for the Faroese fishery, or are there alternative proposals?;*

   We calculate pre-fishery abundance for the following four Norwegian stock complexes, and we propose the same regions for this purpose:

   - Russian border - Vestfjorden, Nordland county
   - Vestfjorden - Møre og Romsdal county
   - Sogn og Fjordane county and Hordaland county
   - Rogaland county - Sweedish border

2) *Do the Parties agree that the management objectives used in developing a risk framework for providing quantitative catch advice for the Faroese fishery should be that there is a 75% probability of simultaneously achieving the conservation limits for each of these management units, or are there alternative proposals?;*

   We agree

3) *Do the Parties agree that the allocation of any harvestable surplus used in developing a risk framework for providing quantitative catch advice for the Faroese fishery should be on the basis of the average share of catches harvested at Faroes and in homewater fisheries during the period 1986-1990, or are there alternative proposals?*

   We agree

Russian Federation

1. *Do the Parties agree that stocks at the country/region level be defined as the management units for the purpose of developing a risk framework for providing quantitative catch advice for the Faroese fishery, or are there alternative proposals?*

   - The Russian Federation provides data to ICES to calculate the pre-fishery abundance for four regions:

     1. Kola Peninsula Barents Sea
     2. Kola Peninsula White Sea
     3. Archangelsk and Karelia
     4. Pechora river

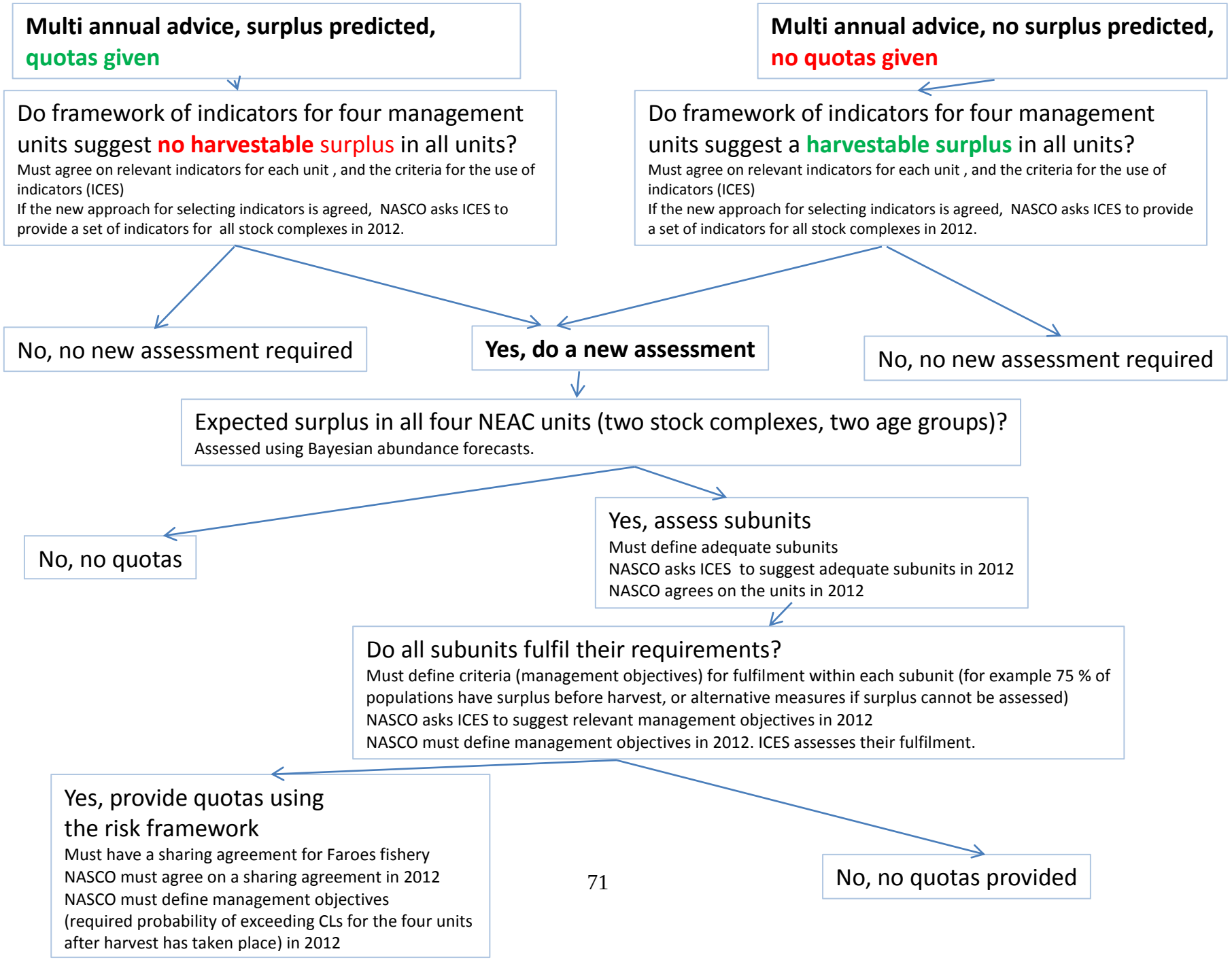
   - We suggest that these units are used for the purpose of developing a risk framework for quantitative catch advice for the Faroese fishery.

2). *Do the Parties agree that the management objectives used in developing a risk framework for providing quantitative catch advice for the Faroese fishery should be that there is a 75% probability of simultaneously achieving the conservation limits for each of these management units, or are there alternative proposals?*

   - We agree to this and do not have any alternative proposals.

3) *Do the Parties agree that the allocation of any harvestable surplus used in developing a risk framework for providing quantitative catch advice for the Faroese fishery should be on the basis of the average share of catches harvested at Faroes and in homewater fisheries during the period 1986-1990, or are there alternative proposals?*

   - We agree to the proposal to use the average share of catches at Faroes and in homewater fisheries in the period 1986-1990 for allocation of harvestable surplus.


Multi annual advice, surplus predicted, quotas given
Multi annual advice, no surplus predicted, no quotas given
Do framework of indicators for four management units suggest no harvestable surplus in all units?
Must agree on relevant indicators for each unit , and the criteria for the use of indicators (ICES)
If the new approach for selecting indicators is agreed, NASCO asks ICES to provide a set of indicators for all stock complexes in 2012.
Do framework of indicators for four management units suggest a harvestable surplus in all units?
Must agree on relevant indicators for each unit , and the criteria for the use of indicators (ICES)
If the new approach for selecting indicators is agreed, NASCO asks ICES to provide a set of indicators for all stock complexes in 2012.
No, no new assessment required
Yes, do a new assessment
No, no new assessment required
Expected surplus in all four NEAC units (two stock complexes, two age groups)?
Assessed using Bayesian abundance forecasts.
No, no quotas
Yes, assess subunits
Must define adequate subunits
NASCO asks ICES to suggest adequate subunits in 2012
NASCO agrees on the units in 2012
Do all subunits fulfil their requirements?
Must define criteria (management objectives) for fulfilment within each subunit (for example 75 % of populations have surplus before harvest, or alternative measures if surplus cannot be assessed)
NASCO asks ICES to suggest relevant management objectives in 2012
NASCO must define management objectives in 2012. ICES assesses their fulfilment.
Yes, provide quotas using the risk framework
Must have a sharing agreement for Faroes fishery
NASCO must agree on a sharing agreement in 2012
NASCO must define management objectives (required probability of exceeding CLs for the four units after harvest has taken place) in 2012
No, no quotas provided

Annex 5

NEA(11)10

Decision regarding the salmon fishery in Faroese waters 2012

The North-East Atlantic Commission:

RECOGNIZING the right of the Faroe Islands to fish for salmon in their area of fisheries jurisdiction;

ACKNOWLEDGING the restraint demonstrated by the Faroe Islands by not having commercial salmon fisheries for a number of years;

RECALLING that the Parties to the North-East Atlantic Commission have previously agreed decisions for the Faroese fishery based on the scientific advice from ICES;

ACKNOWLEDGING that in the past the Faroe Islands have managed the salmon fishery in the area of its fisheries jurisdiction in consideration of the advice from ICES concerning the biological situation and the status of the stocks contributing to the fishery;

AGREEING to continue to work together to establish an agreed mechanism to allocate any exploitable surplus between the Faroe Islands and homewater fisheries on a fair and equitable basis;

NOTING that the Faroe Islands will manage any salmon fishery on the basis of the advice from ICES regarding the stocks contributing to the Faroese salmon fishery in a precautionary manner and with a view to sustainability, taking into account relevant factors, such as socio-economic needs;

ACKNOWLEDGING that Faroese management decisions will be made with due consideration to the advice of ICES concerning the biological situation and the status of the stocks contributing to the fishery;

RECOGNIZING that ICES considers it highly unlikely that the catch options provided for the North-East Atlantic Commission will change during the next three years;

NOTING that Denmark (in respect of the Faroe Islands and Greenland) will, in case of any decision to open the fishery, inform the NASCO Secretariat and all members of the Commission of that decision and the attached conditions. In that event, other members of the Commission could call for a Commission meeting in accordance with Article 10 (7) of the Convention. In such a case, it is agreed to derogate from the provisions of Rule 16 of Procedure;

RECOGNISING that a Framework of Indicators has not been provided by ICES;

HEREBY DECIDES:

Not to set a quota for the salmon fishery in the Faroese Fisheries Zone for 2012.

Annex 6

CNL(11)10

Request for Scientific Advice from ICES

1. With respect to Atlantic salmon in the North Atlantic area:

1.1 provide an overview of salmon catches and landings, including unreported catches by country and catch and release, and production of farmed and ranched Atlantic salmon in 2011[1];
1.2 report on significant new or emerging threats to, or opportunities for, salmon conservation and management[2];
1.3 provide a review of examples of successes and failures in wild salmon restoration and rehabilitation and develop a classification of activities which could be recommended under various conditions or threats to the persistence of populations;
1.4 provide a compilation of tag releases by country in 2011;
1.5 identify relevant data deficiencies, monitoring needs and research requirements.

2. With respect to Atlantic salmon in the North-East Atlantic Commission area:

2.1 describe the key events of the 2011 fisheries[3];
2.2 review and report on the development of age-specific stock conservation limits;
2.3 describe the status of the stocks;
2.4 provide catch options or alternative management advice for 2012-2015, with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[4];
2.5 further develop a risk-based framework for the provision of catch advice for the Faroese salmon fishery, providing a clear indication of the management decisions required for implementation;
2.6 further develop a framework of indicators that could be used to identify any significant change in the assessments used in previously provided multi-annual management advice;
2.7 provide advice on best practice for conducting monitoring surveys for the parasite *Gyrodactylus salaris.*

3. With respect to Atlantic salmon in the North American Commission area:

3.1 describe the key events of the 2011 fisheries (including the fishery at St Pierre and Miquelon)[3];
3.2 update age-specific stock conservation limits based on new information as available;
3.3 describe the status of the stocks;
3.4 provide catch options or alternative management advice for 2012-2015 with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[4].

4. With respect to Atlantic salmon in the West Greenland Commission area:

4.1 describe the key events of the 2011 fisheries[3];
4.2 describe the status of the stocks[5];
4.3 provide catch options or alternative management advice for 2012-2014 with an assessment of risk relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[4];
4.4 update the framework of indicators used to identify any significant change in the previously provided multi-annual management advice;
4.5 advise on possible explanations for the variations in fishing patterns (e.g. effort, licenses and landings) observed in the Greenland fishery in recent years.

Notes:

1. *With regard to question 1.1, for the estimates of unreported catch the information provided should, where possible, indicate the location of the unreported catch in the following categories: in-river; estuarine; and coastal. Numbers of salmon caught and released in recreational fisheries should be provided.*
2. *With regard to question 1.2, ICES is requested to include reports on any significant advances in understanding of the biology of Atlantic salmon that is pertinent to NASCO, including information on any new research into the migration and distribution of salmon at sea and the potential implications of climate change for salmon management.*
3. *In the responses to questions 2.1, 3.1 and 4.1, ICES is asked to provide details of catch, gear, effort, composition and origin of the catch and rates of exploitation. For homewater fisheries, the information provided should indicate the location of the catch in the following categories: in-river; estuarine; and coastal. Any new information on non-catch fishing mortality of the salmon gear used, on the by-catch of other species in salmon gear, and on the by-catch of salmon in any existing and new fisheries for other species is also requested.*
4. *In response to questions 2.4, 3.4 and 4.3, provide a detailed explanation and critical examination of any changes to the models used to provide catch advice and report on any developments in relation to incorporating environmental variables in these models.*
5. *In response to question 4.2, ICES is requested to provide a brief summary of the status of North American and North-East Atlantic salmon stocks. The detailed information on the status of these stocks should be provided in response to questions 2.3 and 3.3.*

Annex 7

List of North-East Atlantic Commission Papers

NEA(11)0	List of papers
NEA(11)1	Provisional Agenda
NEA(11)2	Draft Agenda
NEA(11)3	Development of a Risk Framework for Providing Catch Advice for the Faroese Salmon Fishery
NEA(11)4	Draft Decision regarding the salmon fishery in Faroese waters 2012
NEA(11)5	A Possible Management Approach to Facilitate the Establishment of Multi-Annual Measures for the Faroese Salmon Fishery
NEA(11)6	Agenda
NEA(11)7	Draft Report of the Twenty-Eighth Annual Meeting of the North-East Atlantic Commission
NEA(11)8	Report of the Twenty-Eighth Annual Meeting of the North-East Atlantic Commission
NEA(11)9	Not issued
NEA(11)10	Decision regarding the salmon fishery in Faroese waters 2012
NEA(11)11	ICES Presentation to the North-East Atlantic Commission

REPORT OF THE

TWENTY-EIGHTH ANNUAL MEETING

OF THE

WEST GREENLAND COMMISSION

4 – 6 JUNE 2011
Ilulissat, Greenland

Chairman:	Mr Alan Gray (European Union)
Vice-Chairman:	Mr George Lapointe (US)
Rapporteur:	Ms. Kim Blankenbeker (US)
Secretary:	Dr Malcolm Windsor

WGC(11)9

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WGC(11)9

Report of the Twenty-Eighth Annual Meeting of the West Greenland Commission of the North Atlantic Salmon Conservation Organization

Hotel Arctic, Ilulissat, Greenland

4 - 6 June 2011

1. Opening of the Meeting

1.1 The Chairman, Mr Alan Gray (European Union), opened the meeting and welcomed participants to the Twenty-Eighth Annual Meeting of the Commission.

1.2 An opening statement was made on behalf of the NGOs (Annex 1).

1.3 A list of participants at the Twenty-Eighth Annual Meeting of the Council and Commissions is included on page 171 of this document.

2. Adoption of the Agenda

2.1 The Commission adopted its Agenda, WGC(11)6 (Annex 2).

3. Nomination of a Rapporteur

3.1 Ms Kim Blankenbeker (United States) was appointed rapporteur.

4. Review of the 2010 Fishery and ACOM Report from ICES on Salmon Stocks in the Commission Area

4.1 The representative of ICES, Mr Gérald Chaput, provided a report from ICES on the scientific advice on salmon stocks in the West Greenland Commission area, CNL(11)8. His presentation is available as NASCO document WGC(11)8. The ICES Advisory Committee (ACOM) report, which contains the scientific advice relevant to all Commissions is included on page 119 of this document. The Commission expressed satisfaction with the new format of the ACOM report and thanked Mr Chaput for his excellent presentation. The Chairman of the NGOs asked Mr Chaput whether the figures used in the assessment included the estimate of unreported catch in Greenland. He responded that the assessment uses adjusted figures based on information from the sampling program.

4.2 The representative of Denmark (in respect of Greenland) presented a report on the 2010 fishery, WGC(11)7 (Annex 3).

4.3 Mr. Chaput was asked to comment on the possible reason(s) for the increase in catches from NAFO area 1A. He responded that the increased catch corresponded with an increase in the number of licenses issued, which could mean that an increase in effort could have accounted for the higher harvest level. The representative of Canada expressed concern about the increasing trend of the fishery at West Greenland, and asked if the increase in NAFO area 1A could be the result of improved reporting. The representative of Denmark (in respect of Greenland) stated that they believe the increase in harvest is reflective of a higher abundance of salmon. The representative of ICES indicated that a program to collect information on catch per unit of effort, such as through a logbook program, is needed in order to determine whether or not what fishermen may be seeing on the fishing grounds is related to improved stock status. The Chairman of the NGOs noted that the increase in harvest seen in NAFO area 1A could be due to a shift in distribution of salmon rather than an increase in overall abundance. The representative of Greenland indicated he believed the increase was due to both factors.

4.4 The Chair offered the floor to the special invited guest from KNAPK to make a statement. The representative of KNAPK thanked the Commission for allowing it to participate in the meeting despite not being an accredited observer to NASCO. He called attention to KNAPK's opening statement made to the Council and highlighted that KNAPK is a national organization representing 1,900 Greenlandic hunters and fishermen of the 2,100 license holders, which includes all licensed fishermen. He indicated that KNAPK has a private agreement with organizations in Iceland and Canada where Greenlandic fishermen have agreed not to fish Atlantic salmon commercially. He stressed that KNAPK is committed to the conservation and restoration of Atlantic salmon and that his organization believes salmon is abundant. He also noted the internal challenges facing Greenland relative to the salmon fishery, stating the view of KNAPK that access to Atlantic salmon should not be given to the sport fishery.

5. Regulatory Measures

5.1 At its Twenty-Sixth Annual Meeting, the Commission adopted a regulatory measure for the fishing of salmon at West Greenland in 2009, WGC(09)7, with possible application in 2010 and 2011. Under this agreement the catch at West Greenland in 2009 was restricted to the amount used for internal consumption in Greenland, which in the past has been estimated to be 20 t annually. There would be no commercial export of salmon. The regulatory measure would also apply in 2010 and 2011 if the framework of indicators (FWI) developed by ICES indicated there had been no significant change in the indicators and, therefore, that a reassessment of the catch advice would not be required. Based on the application of the FWI, the 2009 regulatory measure was applied to 2010. The FWI was used by NASCO again in 2011 and a report on the results of its application was reviewed as document WGC(11)3 (Annex 4). As the FWI did not show that there had been a significant change in the indicators used, a reassessment of the ICES management advice for the 2011 fishery at West Greenland was not required. In light of this, the Commission agreed that the multi-annual regulatory measure agreed in 2009 should continue to apply to the 2011 fishery.

5.2 The Commission took note that there would be a need to revisit conservation and management measures for the West Greenland fishery at the 2012 NASCO meeting. In expectation of that discussion, the representative of the United States expressed concern that the stock complex at West Greenland continues to be below conservation limits and, thus, is suffering reduced reproductive capacity. In fact, the overall status of stocks contributing to the West Greenland fishery is among the lowest recorded. NASCO has adopted an action plan that calls for management measures aimed at maintaining the stocks above their conservation limits. The internal-use fishery in West Greenland has been increasing in recent years. This has been a consistent trend since 2002, and the magnitude of the increase in 2010 is alarming. The United States understands that Greenlandic fishermen believe that they are seeing an increase in the availability of Atlantic salmon in local waters. Observations such as these, while important, should not replace scientific advice. And, of course, this is a mixed-stock fishery on many different stocks that are below their conservation limits - including on US stocks that are endangered. In 2009, the Commission agreed a multi-year regulatory measure that would apply in 2010 and 2011 if there was not significant change in the FWI. This regulatory measure restricts the West Greenland fishery to an internal-use fishery with a catch amount estimated to be no more than 20 t. The 2010 estimated catch (including reported and unreported catch as well as observed catch that exceeded the level of reported catch) is almost three times that amount. The United States is very concerned about this increase, especially at a time when the United States has taken additional action to further protect wild Atlantic salmon originating in US rivers. The United States welcomes efforts by Greenland to improve reporting and called on Greenland to take action in 2011 to abide by the regulatory measures agreed at NASCO. The United States looks forward to a productive discussion in 2012 on adoption of a new measure that is consistent with the scientific advice, including the reduction and elimination of mixed-stock fisheries, and the NASCO action plan.

5.3 The representative of the European Union noted support for the US intervention, underscoring the concern about the increases in catch. He expressed appreciation for the report Greenland presented on its fishery, but noted that many of the stocks taken in the fishery at West Greenland are already at risk. He stressed the need for Greenland to improve its monitoring and reporting, and asked Greenland to seriously consider implementing a logbook program. He also asked Greenland to consider limiting licenses. He stressed that additional efforts are needed to ensure NASCO's regulatory measure for the fishery is respected.

6. Sampling in the West Greenland Fishery

6.1 The West Greenland salmon fishery sampling programme provides valuable biological data to the stock assessments conducted by ICES that inform science-based management decisions for this fishery. The Parties to the West Greenland Commission have worked cooperatively over the past three decades to collect these biological data. ICES, the International Atlantic Salmon Research Board and its Scientific Advisory Group, and NASCO all endorsed taking additional samples from fish captured in the internal-use only fishery in Greenland. This Enhanced Sampling Program, SALSEA West Greenland, has been underway for two years. It requires

whole fresh fish and is complementary to SALSEA-Merge and SALSEA North America, which collectively hold promise in providing insights into the critical marine portion of the salmon's life cycle. In 2009 and 2010, NASCO facilitated the purchase of these whole fish, using funds provided by the United States, and the enhanced sampling programme had been successfully implemented in addition to the long-term baseline sampling. In its 2011 ACOM report, ICES supported extending the enhanced sampling program for a third year. Undertaking a third year of sampling will provide a valuable opportunity to not only investigate annual variation of sample results across three years, but also increase the sample size overall to allow for more power to discriminate amongst any regional trends detected at the continent, sub-continent, or possibly even finer scales. It will also increase the likelihood of obtaining information from the smaller contributing stocks. The Enhanced Sampling Plan calls for a maximum of 900 fish to be sampled in any one year. In Year 1 (2009), 412 fish were sampled and in Year 2 (2010) 358 fish were sampled for a total of 770 fish—well below the single year maximum.

6.2 In response to a question from the Chairman, the coordinator of the sampling program in Greenland, Mr Tim Sheehan (USA) reported that samplers in Nuuk during the 2010 campaign were prevented from obtaining baseline samples. He noted, however, that samples obtained as part of the Enhanced Sampling Program were used in the baseline sampling program as well. In light of this difficulty, the Chairman encouraged Denmark (in respect of Greenland) to look into this matter and, where possible, facilitate sampler access to salmon given the importance of the program. The representative of Denmark (in respect of Greenland) indicated they would do what they could but that their power to ensure sampler access to salmon was limited.

6.3 The Commission adopted a West Greenland Fishery Sampling Agreement for 2011, WGC(11)4 (Annex 5).

7. Announcement of the Tag Return Incentive Scheme Prize

7.1 The Chairman announced that the draw for the West Greenland Commission prize in the NASCO Tag Return Incentive Scheme was made by the Auditor on 12 May 2011. The winning tag was of Irish origin. The coded wire tag was applied to a 1+ year old salmon smolt on 28 April 2009 in the Bundorragha River. The fish was recaptured at West Greenland on 10 September 2010. The winner of the US$1,500 prize was Mr Anthon Mathaeussen, Nuuk, Greenland.

8. Recommendations to the Council on the Request to ICES for Scientific Advice

8.1 The Commission agreed to the request for scientific advice from ICES prepared by the Standing Scientific Committee in relation to the West Greenland Commission area. The request to ICES, as agreed by the Council, is contained in document CNL(11)10 (Annex 6).

9. Other Business

9.1 There was no other business.

10. Date and Place of Next Meeting

10.1 The Commission agreed to hold its next meeting at the same time and place as the Twenty-Ninth Annual Meeting of the Council in 2012.

11. Report of the Meeting

11.1 The Commission agreed a report of the meeting.

Note: The annexes mentioned above begin on page 95, following the French translation of the report of the meeting. A list of West Greenland Commission papers is included in Annex 7.

WGC(11)9

Compte rendu de la Vingt-huitième réunion annuelle de la Commission du Groenland Occidental de l'Organisation pour la Conservation du Saumon de l'Atlantique Nord

Hôtel Arctic, Ilulissat, Groenland

4 - 6 juin 2011

1. Séance d'ouverture

1.1 Le Président, M. Alan Gray (Union Européenne), a ouvert la réunion et a souhaité la bienvenue aux participants à la Vingt-huitième réunion annuelle de la Commission.

1.2 Une déclaration d'ouverture a été prononcée conjointement au nom des Organisations non gouvernementales (ONG) (annexe 1).

1.3 La liste des participants à la Vingt-huitième réunion annuelle du Conseil et des Commissions figure à la page 171 de ce document.

2. Adoption de l'ordre du jour

2.1 La Commission a adopté l'ordre du jour, WGC(11)6 (annexe 2).

3. Nomination d'un Rapporteur

3.1 La Commission a nommé Ms. Kim Blankenbeker (États-Unis) Rapporteur de la réunion.

4. Examen de la pêcherie de 2010 et du rapport du Comité Consultatif (ACOM) du CIEM sur les stocks de saumons dans la zone de la Commission

4.1 Le représentant du CIEM, M. Gerald Chaput, a présenté le rapport du CIEM sur les recommandations scientifiques concernant les stocks de saumons de la zone de la Commission du Groenland Occidental, CNL(11)8. Le document WGC(11)8 de l'OCSAN reproduit sa présentation. Le rapport de l'ACOM du CIEM contenant les recommandations scientifiques pour l'ensemble des Commissions figure à la page 119 de ce document. La Commission a exprimé sa satisfaction à propos du nouveau format du rapport ACOM et a remercié M. Chaput de son excellente présentation. Le Président des ONG a demandé à M. Chaput si les statistiques utilisées dans l'évaluation incluaient l'estimation des captures non déclarées du Groenland. Celui-ci a répondu que l'évaluation reposait sur des chiffres ajustés et basés sur l'information tirée du programme d'échantillonnage.

4.2 Le représentant du Danemark (pour le Groenland) a présenté un rapport sur la pêcherie de 2010, WGC(11)7 (annexe 3).

4.3 On a prié M. Chaput de bien vouloir donner son avis sur ce qui pourrait expliquer l'augmentation des captures provenant de la zone 1A de l'Organisation des Pêcheries du Nord-ouest Atlantique (OPNA). M. Chaput a répondu que l'augmentation des captures correspondait à un plus grand nombre de permis octroyés ; un niveau plus élevé de récolte pourrait donc s'expliquer par un effort de pêche plus important. Le représentant du Canada a fait connaître son inquiétude à propos de la tendance à la hausse de la pêche au Groenland Occidental. Il a ainsi demandé si, en fait, l'augmentation enregistrée dans la zone 1A de l'OPNA pourrait résulter d'une amélioration des comptes rendus. Le représentant du Danemark (pour le Groenland) a déclaré qu'ils pensaient que l'augmentation de la récolte reflétait une plus grande abondance de saumons. Le représentant du CIEM a indiqué qu'il était nécessaire d'instaurer un programme de collecte d'informations sur les captures par unité d'effort ; un système de registres, par exemple, permettrait de déterminer si ce que constataient les pêcheurs sur les lieux de pêche correspondait en effet à une amélioration du niveau du stock. Le Président des ONG a émis la remarque que l'augmentation de la récolte enregistrée dans la zone 1A de l'OPNA pourrait être due à une modification de la distribution du saumon plutôt qu'à une augmentation de l'abondance en général. Selon le représentant du Danemark (pour le Groenland) l'augmentation était due à ces deux facteurs.

4.4 Le Président a offert la parole à l'invité spécial du KNAPK. Le représentant du KNAPK a remercié la Commission pour son autorisation de participer à la réunion bien que le KNAPK ne soit pas un observateur accrédité de l'OCSAN. Il a attiré l'attention sur la déclaration d'ouverture du KNAPK effectuée durant la réunion du Conseil. Il a ensuite souligné que le KNAPK était un organisme qui représentait à l'échelle nationale, parmi les 2 100 titulaires de permis, 1 900 chasseurs et pêcheurs groenlandais ce qui comprenait l'ensemble des pêcheurs titulaires de permis. Il a indiqué que le KNAPK avait conclu un accord privé avec des organismes islandais et canadiens, selon lequel les pêcheurs groenlandais avaient accepté de ne pas pêcher le saumon atlantique commercialement. Il a souligné l'engagement du KNAPK à la conservation et restauration du saumon atlantique et a signalé que l'organisation considérait que le saumon était abondant. Il a également fait remarquer les défis présentés par la pêcherie de saumons que le Groenland devait relever sur le plan domestique ; ainsi le KNAPK était d'avis que la pêche récréative ne devrait pas avoir accès au saumon atlantique.

5. Mesures de réglementation

5.1 Lors de sa Vingt-sixième réunion annuelle, la Commission avait adopté une mesure pour la pêche au saumon au Groenland Occidental en 2009, WGC(09)7, mesure qui pourrait demeurer d'application en 2010 et 2011. Selon cet accord, les captures en 2009 au Groenland Occidental avaient été limitées à ce qui était nécessaire à la consommation interne du Groenland, et estimé auparavant à 20 t par an. Aucune exportation commerciale de saumons n'avait été autorisée. Cette mesure de réglementation serait également appliquée en 2010 et 2011 si le cadre des indicateurs

(FWI) mis au point par le CIEM indiquait aucun changement significatif des indicateurs ce qui, de ce fait, éviterait une réévaluation des recommandations de captures. Basée sur l'application des FWI, la mesure de réglementation de 2009 a été renouvelée en 2010. En 2011, l'OCSAN a de nouveau eu recours aux FWI et un compte rendu (rapport WGC(11)3 (annexe 4)) concernant les résultats de son application a été soumis à l'étude. Comme les FWI n'indiquaient pas de changements importants des indicateurs, il n'a pas été nécessaire de réévaluer les recommandations du CIEM pour la pêcherie au Groenland Occidental de 2011. À la lumière de ces faits, la Commission a convenu de continuer d'appliquer à la pêcherie de 2011 la mesure de réglementation pluriannuelle adoptée en 2009.

5.2 La Commission a pris note qu'il serait nécessaire de revoir les mesures de conservation et de gestion appliquée à la pêcherie du Groenland Occidental lors de la Réunion de 2012 de l'OCSAN. Dans l'attente de ce débat, la représentante des États-Unis a exprimé son inquiétude à propos du fait que le complexe de stock au Groenland Occidental demeurait en dessous des limites de conservation et souffrait de ce fait d'une capacité réduite de reproduction. En fait, le niveau général des stocks qui contribuaient à la pêcherie du Groenland Occidental figurait parmi les plus bas niveaux enregistrés. L'OCSAN avait adopté un programme d'actions qui exigeait des mesures de gestion visant à maintenir les stocks au dessus de leurs limites de conservation. La pêche à des fins de consommation interne au Groenland Occidental a augmenté au cours des dernières années. Ceci représentait une tendance continue depuis 2002 et l'ampleur de l'augmentation en 2010 était alarmante. La représentante des États-Unis comprenait que les pêcheurs groenlandais observaient, à leur avis, une augmentation du nombre de saumons atlantiques dans les eaux locales. Des observations de ce type, bien qu'importantes, ne devraient toutefois pas remplacer les recommandations scientifiques. Et, bien sûr, il s'agissait là d'une pêcherie de stock mixte, composée de nombreux stocks différents qui se trouvaient en dessous de leurs limites de conservation, dont les stocks américains qui étaient en danger d'extinction. En 2009, la Commission avait convenu d'une mesure de réglementation pluriannuelle qui serait d'application en 2010 et en 2011, s'il n'y avait pas de changement important dans les indicateurs FWI. Cette mesure de réglementation restreignait la pêcherie du Groenland Occidental à une pêcherie de consommation interne avec un total de captures estimé à un maximum de 20 t. Or l'estimation des captures de 2010 (comprenant les captures déclarées, les captures non déclarées, ainsi que les captures observées qui excédaient le niveau des captures déclarées) s'élevaient à presque trois fois ce volume. Ceci avait suscité de grandes inquiétudes auprès des États-Unis, d'autant plus que les États-Unis avait pris des mesures supplémentaires pour mieux protéger les saumons atlantiques sauvages provenant des rivières américaines. La représentante des États-Unis accueillait favorablement les efforts déployés par le Groenland pour améliorer les comptes rendus et a enjoint le Groenland de prendre des mesures en 2011 afin de respecter la mesure de réglementation adoptée lors de la Réunion annuelle de l'OCSAN de 2009. La représentante des États-Unis avait hâte d'entamer un débat productif en 2012 concernant l'adoption d'une nouvelle mesure ; mesure qui concorderait aux recommandations scientifiques, dont la réduction et l'élimination des pêcheries de stock mixte et au plan d'action de l'OCSAN.

5.3 Le représentant de l'Union européenne a exprimé son soutien à l'intervention américaine, soulignant son inquiétude concernant les augmentations de captures. Et même s'il avait démontré son appréciation envers le représentant du Danemark (pour le Groenland) pour le rapport qu'il avait présenté sur la pêcherie, il a tout de même fait remarquer que plusieurs des stocks récoltés dans la pêcherie du Groenland Occidental étaient en danger. Il a souligné la nécessité pour le Groenland d'améliorer sa surveillance et ses comptes rendus et a demandé au pays de considérer sérieusement une mise en place d'un programme de registres. Le représentant de l'Union européenne a également demandé au Groenland d'envisager de limiter les permis octroyés. Il a souligné que ces efforts supplémentaires étaient nécessaires afin de garantir que la mesure de réglementation de l'OCSAN pour cette pêcherie soit respectée.

6. Echantillonnage dans la pêcherie du Groenland occidental

6.1 Le programme d'échantillonnage de la pêche au saumon du Groenland Occidental fournit des renseignements biologiques précieux à l'évaluation des stocks. Cette évaluation, menée par le CIEM, informe à son tour les décisions de gestion de cette pêcherie qui sont ainsi prises sur une base scientifique. Au cours des trois dernières décennies, les Parties de la Commission du Groenland Occidental ont oeuvré ensembles pour rassembler ces données biologiques. Le CIEM, la Commission Internationale de Recherche sur le Saumon Atlantique, son Comité consultatif scientifique et l'OCSAN approuvent tous une collecte d'échantillons supplémentaires prélevée sur des poissons capturés au cours de la pêche effectuée uniquement pour la consommation interne du Groenland. En cours depuis deux ans, ce programme étendu d'échantillonnage, intitulé SALSEA Groenland Occidental, nécessite en effet des poisons frais entiers. Il s'agit d'un programme complémentaire de SALSEA Merge et SALSEA Amérique du Nord. Considérés dans leur globalité ces programmes promettent d'aider à mieux comprendre la partie déterminante du cycle de vie du saumon, à savoir son évolution en mer. En 2009 et 2010, l'OCSAN avait facilité l'achat de ces poissons entiers en utilisant les fonds fournis par les États-Unis. En plus de l'échantillonnage de base effectué à long terme, le programme étendu d'échantillonnage s'était ainsi bien déroulé. En 2011, par le biais du rapport de l'ACOM, le CIEM soutenait l'extension, sur une troisième année, de ce programme étendu d'échantillonnage. Une troisième année de ce type d'échantillonnage représenterait en effet non seulement une occasion précieuse d'étudier les variations annuelles enregistrées dans les résultats de l'échantillonnage sur 3 ans, mais aussi d'augmenter le volume global de l'échantillon. Ceci permettrait à son tour de distinguer plus subtilement les tendances régionales notables à l'échelle du continent, du sous-continent, ou même à des échelles plus réduites. Cet exercice augmentera également la possibilité d'obtenir des informations sur les plus petits des stocks qui contribuent à cette pêcherie. Le programme étendu d'échantillonnage exige un maximum de 900 poissons par an. Au cours de la première année (2009), 412 poissons avaient été prélevés et, au cours de la seconde année (2010), ceux-ci comptaient 358 d'où un total de 770 poissons— bien en dessous du maximum annuel.

6.2 En réponse à une question du Président, M. Tim Sheehan (États-Unis), coordonnateur du programme d'échantillonnage, a indiqué qu'au cours de l'exercice de 2010, les échantillonneurs à Nuuk n'avaient pas pu prélever les échantillons de base. Cependant, il a fait remarquer que les échantillons obtenus lors du programme étendu d'échantillonnage avaient également servi à l'échantillonnage de base. Étant donné cette difficulté, le Président a encouragé le Danemark (pour le Groenland) à étudier la question et de faciliter, dans la mesure du possible, l'accès des échantillonneurs aux saumons, étant donné l'importance du programme. Le représentant du Danemark (pour le Groenland) a indiqué que son pays ferait ce qu'il pourrait mais que leur pouvoir quant à l'accès des échantillonneurs aux saumons était limité.

6.3 La Commission a adopté un accord d'échantillonnage de la pêche au Groenland Occidental pour 2011, WGC(11)4 (annexe 5).

7. Annonce du gagnant du prix du Programme d'encouragement au renvoi des marques

7.1 Le Président a annoncé que le tirage au sort du prix de la Commission du Groenland Occidental du Programme d'encouragement au renvoi des marques de l'OCSAN avait été effectué par le Commissaire aux comptes le 12 mai 2011. La marque gagnante était d'origine irlandaise. La marque métallique codée avait été appliquée, le 28 avril 2009, sur un smolt de plus d'un an, dans la rivière Bundorragha. Le poisson avait été capturé à nouveau au Groenland Occidental le 10 septembre 2010. Mr Anthon Mathaeussen de Nuuk, au Groenland a remporté le prix de 1 500 dollars (US).

8. Recommandations au Conseil dans le cadre de l'avis scientifique émanant du CIEM

8.1 La Commission a accepté la demande au CIEM de recommandations scientifiques, telle qu'elle avait été préparée par le Comité Scientifique Permanent pour la zone de la Commission du Groenland Occidental. La demande au CIEM de recommandations scientifiques, approuvée par le Conseil, figure dans le document CNL(11)10 (annexe 6).

9. Divers

9.1 Aucune autre question n'a été traitée.

10. Date et lieu de la prochaine réunion

10.1 La Commission a convenu de tenir sa prochaine réunion en même temps et au même endroit que la Vingt-neuvième réunion annuelle du Conseil, en 2012.

11. Compte rendu de la réunion

11.1 La Commission a accepté le compte rendu de la réunion.

Note: Les annexes mentionnées ci-dessus commencent à la page 95. Une liste des documents de la Commission du Groenland Occidental figure à l'annexe 7.

Annex 1

Joint NGO Opening Statement to the West Greenland Commission

I am pleased to present the joint opening statement on behalf of the NGO Group.

The NGOs express deep concern with the significant increase in Greenland's Internal Consumption Fishery. NASCO has been successful since 2003 in reaching agreement with Greenland to limit their salmon fishery to internal consumption only, but the number of salmon that this fishery kills has ballooned from 12 tonnes in 2003 to 43 tonnes in 2010, as estimated by ICES. ICES states that 81% or about 10,000 of the large salmon killed in this fishery in 2010 were of North American origin and 2,600 of European origin. In addition, ICES estimates an unreported harvest at Greenland of 10 tonnes (another 2,500 salmon).

There is potential of killing salmon from the United States that are protected as endangered species under national legislation and salmon from many rivers in Canada that have recently been designated as endangered, threatened or of special concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Recovery programs for endangered salmon are underway in both countries at significant expense.

To protect fragile populations from both North America and Southern Europe that migrate to feeding grounds off Greenland, the NGOs urge NASCO to implement measures to better quantify, monitor and control the internal consumption fishery at Greenland to keep it at the lowest level possible.

The NGOs are greatly concerned at the imminent likelihood of a commercial fishery being re-established in Greenland waters. To prevent this occurring, we believe that urgent action must be taken by all NASCO Parties to phase-out all remaining mixed-stock fisheries within their own jurisdictions, and enact laws and policies that are consistent with ICES advice and precautionary management.

Annex 2

WGC(11)6

Agenda

1. Opening of the Meeting
2. Adoption of the Agenda
3. Nomination of a Rapporteur
4. Review of the 2010 Fishery and ACOM Report from ICES on Salmon Stocks in the Commission Area
5. Regulatory Measures
6. Sampling in the West Greenland Fishery
7. Announcement of the Tag Return Incentive Scheme Prize
8. Recommendations to the Council on the Request to ICES for Scientific Advice
9. Other Business
10. Date and Place of Next Meeting
11. Report of the Meeting

Annex 3

WGC(11)7

The 2010 Fishery at West Greenland

Tabled by Denmark (in respect of theFaroe Islands and Greenland)

At the Annual Meeting of NASCO in June 2010, the West Greenland Commission agreed to restrict the catch of Atlantic salmon at West Greenland to that amount used for internal subsistence consumption in Greenland. Furthermore, no commercial export of salmon was allowed.

In accordance with the Regulatory Measure adopted by the West Greenland Commission, the Government of Greenland decided to set the national quota for commercial landings of Atlantic salmon to fishing plants to zero tonnes, as well as prohibited any export of salmon from Greenland in 2010. Only a subsistence fishery was allowed, i.e. a fishery for private consumption, and a fishery with the aim of supplying local open air markets, hotels and institutions etc. The latter activity is only allowed for professional fishermen holding licences.

In 2010, the fishery opened on 1 August and closed at the end of October. During this period a total catch of 39.7 tonnes of salmon was reported to the Greenland Fishery Licence Control (GFLK). Of this, 12.4 tonnes were reported by licensed fishermen as sold at open air markets etc, and the remaining 27.3 tonnes were reported as used for private consumption. However, 15 tonnes of the private consumption was reported by licensed fishermen. Compared to the previous year the total catch increased by 13.5 tonnes corresponding to 53%. The increase mainly occurred in NAFO area 1A where the reported catches increased from an insignificant amount of 0.2 tonnes to 17.3 tonnes while catches in all other areas were relatively stable. For the second year in a row, catches were reported from East Greenland in the amount of 1.7 tonnes as compared to 0.7 tonnes in 2009.

The fishery is regulated in the Greenland Home Rule Executive Order No 21 of 10 August 2002 on the Salmon Fishery. The Executive Order distinguishes between 1) commercial fishery for Atlantic salmon to be landed at fish plants, 2) subsistence fishery by residents of Greenland, and 3) rod fishery by tourists/non-residents.

All fishermen who wish to sell Atlantic salmon must hold a licence as well as report the catches to GFLK. In 2010, 309 licences were issued, but only 57 of these were utilized for selling according to the reports received. The catches were either sold at local open air markets or to local institutions, hotels etc, or kept for private consumption. The number of salmon caught is reported to be 11,747.

The wildlife and fisheries officers of GFLK make random checks at local markets in towns and settlements along the west coast of Greenland, and in hotels, restaurants, shops etc. in order to compare purchase of salmon with reported catches. In 2010, the wildlife and fisheries officers once again have put a lot of effort into handing out reporting forms to all

fishermen whom they have observed fishing for salmon, and informing them that all catches must be reported to GFLK.

The Ministry of Fisheries, Hunting and Agriculture is contemplating amendments to the current regulation with a view to improving catch reporting so to establish a more comprehensive picture of the fishery as such. In this process scientists need much more detailed information and biological data. The Ministry will continue its information services in terms of reminding fishermen to report salmon catches, allowed gear to be used etc. and this information will mainly be disseminated by transmitting TV spots during the salmon fishing season.

Annex 4

WGC(11)3

Report on the Use of the Framework of Indicators in 2011

1. At its 2009 Annual Meeting, in Molde, Norway, the West Greenland Commission adopted a regulatory measure (WGC(09)7) for the fishing of salmon at West Greenland in 2009, with possible application in 2010 and 2011. Under this measure the catch at West Greenland in 2009 was restricted to the amount used for internal consumption in Greenland, which in the past has been estimated to be 20 tonnes annually. There would be no commercial export of salmon. The regulatory measure would also apply in 2010 and 2011 if the framework of indicators (FWI) developed by ICES indicates that there has not been a significant change in the indicators and, therefore, that reassessment of the catch advice is required.

2. The Commission had agreed that the same procedure used in 2008 for applying the FWI should apply to the new regulatory measure, WGC(09)7. Under this arrangement a small group comprising one representative from each member of the Commission would work by correspondence to coordinate the data collection and application of the FWI. The Secretariat would liaise with the Group's Coordinator and would report the Group's findings to the Parties and to ICES. Following application of the FWI in 2010, no reassessment of the advice was required and the measure applied to the 2010 fishery.

3. In accordance with this decision, each WGC Party was again asked to nominate a representative to serve on the FWI Working Group in 2011. The representatives appointed were Gerald Chaput (Canada), Sonja Feldthaus (Denmark (in respect of the Faroe Islands and Greenland)), Ted Potter (European Union) and Rory Saunders (USA). Ted Potter served as the Group's Coordinator. The Group's report is attached. The Group's overall conclusion is that the FWI does not show that there has been a significant change in the indicators used and, therefore, a reassessment of the ICES management advice for the 2011 fishery at West Greenland is not required. This means that the multi-annual regulatory measure agreed in 2009 will continue to apply to the 2011 fishery and there will not, therefore, be a need for negotiations on a new measure at the Twenty-Eighth Annual Meeting. It also means that, in accordance with the request for scientific advice adopted by the Council last year, ICES is not be required to provide advice on stock status or management options for either the NAC or WGC areas.

4. This arrangement again appeared to work well and within the timescale proposed by the Commission. We are grateful to the Group for its work. A full report will be presented to the Commission in June.

Secretary
Edinburgh
7 April 2011

NASCO - WEST GREENLAND COMMISSION

REPORT OF THE FRAMEWORK OF INDICATORS WORKING GROUP 2011

Introduction:

At its Annual Meeting in Molde, the West Greenland Commission adopted a multi-annual regulatory measure for the West Greenland salmon fishery for the years 2009, 2010 and 2011 (WGC(09)7). This regulatory measure applied to the fishery in 2009 and 2010, and it will be carried forward to 2011 without further review unless application of the Framework of Indicators (FWI) shows that there has been a significant change in the indicators used and, therefore, that a full reassessment of the management advice is required.

The Commission agreed that the same procedure used in 2008 should again be used in applying the FWI in 2011 under the current regulatory measure. Thus, a small group comprising one representative from each member of the Commission was appointed to work by correspondence to collect the data and apply the FWI (Annex 1 and 2). The Working Group comprised:

Gerald Chaput	Canada
Sonja Feldthaus	Denmark (in respect of the Faroe Islands and Greenland)
Ted Potter	European Union
Rory Saunders	USA

The Group was asked complete their tasks before the end of January 2010 and to liaise with the NASCO who would present their findings to the Parties and to ICES.

Work of the Working Group:

Ted Potter agreed to act as coordinator of the FWI Working Group for 2011. Annex 3 summarizes the chronology of the work undertaken by the Group. A request for data to populate the FWI was circulated to representatives from each of the North American Commission 'management units' (Annex 4), and returns were sent to the coordinator. The coordinator then circulated the completed FWI worksheet for 2010 (Annex 5) and the draft report to the Working Group for their review and agreement.

Framework of Indicators Analysis – 2010:

The FWI worksheet includes data from five North American Commission 'management units': Newfoundland, Gulf, Quebec, Scotia-Fundy, and USA. Each Working Group member has reviewed the raw data and the FWI assessment spreadsheet and confirmed their agreement with the following summary of the findings for the return year 2010 (Annex 3).

Data for two of the indicators from the Scotia-Fundy region of Canada ('Lahave Survival Hatchery 2SW (%)' and 'Lahave Survival Hatchery 1SW (%)') ceased to be collected from 2008 and have not been included in the FWI for 2009 or 2010. Data for the 'Margaree Return Small' indicator was unavailable at the time of this report for 2010. In addition, the

data-coordinator for Scotia-Fundy management unit has indicated that this is likely to be the last year that data will be available for the LaHave, and possibly the North rivers.
The indicators for the return year 2010 are mixed (Annex 5), with all but one of the 15 indicator scores for Quebec and Newfoundland being positive but all but two of the 16 indicator scores for Scotia-Fundy and USA being negative. The two remaining indicators for the Gulf management unit are strongly divergent, one being positive and the other negative. Nine of the indicators for Quebec and Newfoundland were the highest for the period 2008-2010, with the remainder being second highest, whereas seven of the indicators for Scotia-Fundy, Gulf, and USA were the lowest in the series, with a number continuing to be at critically low levels.
.
The data-coordinator for the Scotia-Fundy management unit has noted that the indicator for St. Mary's River appears abnormally low and has suggested that it might be omitted from this year's assessment. However, omitting this value only results in the average indicator score for Scotia-Fundy increasing from –0.73 to –0.71, and so has minimal effect on the overall assessment.

The Group also noted that 50,000 smolts have been stocked annually into the Narraguagus River since 2008. This is not the first time smolts have been stocked in the Narraguagus, but it is clearly a fairly large departure from past practices and appears to have resulted in a substantial increase in adult returns. Nevertheless, the indicator score for the 'Narraguagus Returns' is still negative.

The assessment therefore indicates that the Management Objectives should be met for Quebec and Newfoundland, but are not expected to be met for Gulf, Scotia-Fundy and USA.

Conclusions:

The overall conclusion of the FWI Working Group is that the FWI does not show that there has been a significant change in the indicators used and therefore a re-assessment of the ICES management advice for the 2011 fishery is not required.

In view of the various changes to the indicator data sets, **the Working Group recommends that ICES be asked to review the FWI worksheet, as per the three year cycle anticipated (for 2012 – 2014) and before it is used in association with a future multi-annual regulatory measure for the West Greenland salmon fishery.**

FWI Working Group
31st January 2011

Appendix 1. Initial communication from NASCO to Heads of West Greenland Commission regarding application of the Framework of Indicators

From: hq@nasco.int [mailto:hq@nasco.int]
Sent: 15 November 2010 17:52
To: Heads of West Greenland Commission
Cc: Sonja Feldthaus (SOFE@nanoq.gl); Jacob S Isbosethsen (JSIS@nanoq.gl); Alan Gray (alan.gray@ec.europa.eu); Julius Peedah (JUPE@nanoq.gl); Kimberly Blankenbeker (Kimberly.Blankenbeker@noaa.gov); Mary Colligan (mary.a.colligan@noaa.gov); Rory Saunders (rory.saunders@noaa.gov); Ted Potter (Cefas); Timothy Sheehan (Tim.Sheehan@noaa.gov)
Subject: Framework of Indicators

To: Heads of West Greenland Commission
From: Secretary
RE: Framework of Indicators

At the 2009 Annual Meeting of the West Greenland Commission a multi-annual regulatory measure was adopted for the West Greenland salmon fishery for the years 2009, 2010 and 2011, WGC(09)7. This measure will therefore apply again to the 2011 fishery unless the application of the Framework of Indicators (FWI) shows that there has been a significant change in the indicators used and therefore that a re-assessment of the management advice is required.

When the FWI was run in 2008 and 2010 a small Group comprising one representative of each member of the Commission worked by correspondence to collate the data and apply the FWI. This task needs to be completed by the end of January 2011 and the Secretariat will liaise with the Co-ordinator of the Group and present the findings to the Parties and to ICES.

Last year the members of the Group, which completed its work effectively and within the agreed timescale, were:

Gerald Chaput	Canada
Julius Peedah	Denmark (in respect of the Faroe Islands and Greenland)
Ted Potter	EU
Rory Saunders	USA (Coordinator)

We need to resolve the membership of the Group to apply the FWI for 2011 and I would be grateful, therefore, if you would confirm the name of your representative by 10 December. Once membership of the Group is agreed it can conduct its assessment once it has received the data required.

Best regards

Malcolm Windsor
Secretary

WGC14.301

Appendix 2. Notification of representation on the FWI Working Group

From: hq@nasco.int [mailto:hq@nasco.int]
Sent: 08 December 2010 10:58
To: FWI Working Group
Subject: FWI Working Group

Dear All,

We have been advised that the representatives on the Framework of Indicators Working Group will be as follows:

Canada	Gerald Chaput
Denmark	Sonja Feldthaus (in respect of the Faroe Islands and Greenland)
European Union	Ted Potter
USA	Rory Saunders

I would ask that this Group appoint a Coordinator to liaise with the NASCO Secretariat and that the Group's findings be reported to us no later than 31 January 2011 so that I can advise the Parties to the West Greenland Commission and ICES. Rory Saunders served as Coordinator last year.

Thank you for agreeing to contribute to the work of this Group.

Best regards

Malcolm Windsor
Secretary

WGC14.304

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Annex 3. Summary of requests and receipts of data for Indicator Framework

Date	Contact	Action
08-Apr-09	ICES-WGNAS	finalized and updated FWI
30-Apr-09	ICES-ACOM	reviewed and approved FWI
04-Jun-09	NASCO-WGC	FWI presented by ICES accepted by NASCO for the 2010 and 2011 advice years.
15-Nov-10	Secretariat	Request to Heads of WGC for nominations to the FWI Working Group
08-Dec-10	Secretariat	Confirmation of membership and responsibilities of FWI Working Group
08-Dec-10	FWI-CG	Agreement on Ted Potter as coordinator of FWI-WG for 2011
17-Dec-10	Potter	Request for data inputs sent to Canadian and USA contacts
20-Dec-10	Veinott	Data submitted to coordinator for Newfoundland indicators
06-Jan-10	Saunders	Data submitted to coordinator from USA indicators
20-Jan-11	Dionne	Data submitted to coordinator for Quebec indicators
21-Jan-11	Gibson	Data submitted to coordinator for Scotia-Fundy indicators
30-Jan-11	Chaput	Data submitted to coordinator for Miramichi River - Gulf indicators
31-Jan-11	Potter	Completed FWI worksheet and prepared draft report.
31-Jan-11	Potter	Draft report circulated to FWI-WG for approval including FWI input data, FWI worksheet and draft conclusions of assessment.
31-Jan-11	Chaput	Confirmed agreement with assessment and report on behalf of Canada
31-Jan-11	Saunders	Confirmed agreement with assessment and report on behalf of USA
31-Jan-11	Potter	Informed Malcolm Windsor that report would be delayed past deadline
3-Feb-11	Feldthaus	Confirmed agreement with assessment and report on behalf of Denmark (in respect of the Faroe Islands and Greenland)
3-Feb-11	Potter	Agreed Report of FWI-Working Group sent to Malcolm Windsor, NASCO

Annex 4. Requests to provide indicator data to populate the framework spreadsheet.

From: Ted Potter (Cefas)
Sent: 17 December 2010 14:29
To: Rory Saunders; Gibson, Jamie; Veinott, Geoff; Melanie.Dionne@mrnf.gouv.qc.ca
Cc: 'Chaput, Gerald'; 'SOFE@nanoq.gl'
Subject: Data to run the Framework of indicators for NASCO / données pour faire tourner le cadre d'indicateurs pour l'OCSAN

Le message en français suit:

Dear colleagues,

NASCO employs a Framework of Indicators (FWI) to indicate whether a full re-assessment of the multi-year catch advice for West Greenland may be required. This is based on returns and return rates of salmon to rivers in eastern North America. The framework was initially developed by ICES in 2007 and accepted by NASCO at the June 2007 meeting. The ICES Working Group updated the FWI in April 2009. The updated FWI was accepted by NASCO in June 2009 and is to be used for determining whether or not catch advice will be requested from ICES for the June 2011 meeting.

A coordination group (Gerald Chaput, Rory Saunders, Sonja Feldthaus and myself) working on behalf of NASCO has been established. The group is asking you to update the data for 2010 for those rivers which are included in the framework. The attached spreadsheet contains the list of rivers which are in the framework and I am requesting you to input the corresponding returns or return rates for the most recent year, 2010. For your information, I have included the 2008-09 data for each of the indicators which have been assembled in previous years. I have indicated to the best of my knowledge the contacts for each river. If the contact is not appropriate, please forward the request to the appropriate person or indicate to me who that person is and I will request the information.

The framework of indicators analysis is to be completed by January 31 2011, therefore, the coordination group would appreciate receiving your inputs by Wednesday, January 22, 2011. Please return your inputs to me. Please feel free to contact Gerald, Rory or myself if you have any questions.

Thank you, and have a very merry Christmas! Ted

Bonjour,

NASCO emploie un cadre d'indicateurs a été préparé afin de déterminer si une ré-évaluation complète des avis multi-années pour la pêche au Groenland serait necéssaire pour une année dite. Le cadre d'indicateurs a été développé par le CIEM en 2007 et accepté par l'OCSAN en juin 2007. Le groupe de travail du CIEM a mis à jour le cadre en avril 2009 et l'OCSAN a accepté le cadre révisé en juin 2009 afin de

savoir si le d'avis devrait être demandé au CIEM pour la réunion de l'OCSAN de juin 2011.

Un groupe de coordonnation (Gérald Chaput, Rory Saunders, Sonja Feldthaus et moi-même) a été formé pour entrependre ce travail pour l'OCSAN. Le groupe de coordonnation solicite présentement vos données pour 2010 propres aux rivières/indicateurs dans le cadre. Le fichier Excel en pièce-jointe comprend la liste des rivières qui sont inclues dans le cadre and je vous demande d'inscrire les retours ou taux de retours correspondants pour la dernière année, 2010. Pour votre information, j'ai inclus les données pour 2008-09 pour chacun des indicateurs qui ont été assemblés en années précédentes. A mes meilleurs connaissances, j'ai indiqué la personne contacte pour chaque rivière ou région. Si la personne indiquée n'est pas la bonne, pourriez-vous transmettre ce message à la bonne personne ou m'aviser et j'entreprendrai la communication avec elle moi-même.

On nous demande de compléter l'analyse du cadre d'indicateur pour le 31 janvier 2011 alors le groupe de coordination serait reconnaissant si le fichier pourrait nous être retourné d'ici mercredi le 22 janvier, 2011. Vous pouvez retourner vos informations à moi-même. Vous pouvez contacter soit Gerald, Rory ou moi-même si vous avez des questions.

Merci et Noël heureux !

Ted

Ted Potter
Science Leader Fisheries Division
Cefas, Pakefield Road,
Lowestoft , Suffolk, NR33 0HT, UK

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www.cefas.co.uk

Annex 5

WGC(11)4

West Greenland Fishery Sampling Agreement, 2011

The West Greenland Commission recognizes the important contribution of sound biological data to science-based management decisions for fisheries prosecuted in the West Greenland Commission area. The Parties in the West Greenland Commission have worked cooperatively over the past three decades to collect biological data on Atlantic salmon harvested at West Greenland. These data provide critical inputs to the stock assessment completed by the International Council for the Exploration of the Sea (ICES) North Atlantic Salmon Working Group annually.

ICES, the International Atlantic Salmon Research Board and its Scientific Advisory Group, and NASCO all endorse taking additional samples from fish captured in the internal-use only fishery in Greenland. This Enhanced Sampling Program, SALSEA West Greenland, requires whole fresh fish and is recognized as complementary to SALSEA-Merge and SALSEA North America, which collectively hold promise in providing insights into the critical marine portion of the salmon's life cycle. The whole fresh fish required for scientific analysis (e.g. stomach content, isotope analysis) would be fish that are part of the existing internal-use fishery. Strong coordination and cooperation with the Government of Greenland and Kalallit Nunaanni Aalisartut Piniartullu Kattuffiat (KNAPK) in carrying out this scientific research program is required to fully integrate the sampling program into the internal-use fishery.

The objectives of the sampling program in 2011 are to:

- Continue the time series of data (1969-2010) on continent of origin and biological characteristics of the salmon in the West Greenland Fishery;

- Provide data on mean weight, length, age and continent of origin for input into the North American and European run-reconstruction models;

- Collect information on the recovery of internal and external tags;

- Collect additional biological samples from fresh whole fish in support of SALSEA West Greenland or other special samples as requested.

To this end, the sampling program in 2011 will collect:

- Biological characteristics data including lengths and weights of landed fish;
- Information on tags, fin clips, and other marks;
- Scale samples to be used for age and growth analyses;
- Tissue samples to be used for genetic analyses;
- Various other biological samples (e.g. stomach content, isotope analysis) in support of SALSEA West Greenland;
- Other biological data requested by the ICES scientists and NASCO cooperators.

External Staffing Inputs:

Parties external to Greenland with interests in the mixed-stock fishery at West Greenland, including Canada, the European Union, and the United States, have historically provided personnel and analytical inputs into the cooperative sampling programs. The NASCO Parties agree to provide the following inputs to the cooperative sampling program at West Greenland during the 2011 fishing season:

- The European Union[1] agrees to provide a minimum of 6 person weeks[2] to sample Atlantic salmon at West Greenland during the 2011 fishing season;
- Canada agrees to provide a minimum of 2 person weeks[2] to sample Atlantic salmon at West Greenland during the 2011 fishing season;
- The United States agrees to provide a minimum of 4 person weeks[2] to sample Atlantic salmon at West Greenland during the 2011 fishing season;
- The United States agrees to co-ordinate the sampling program for 2011;
- The United States agrees to provide funding for Greenland Institute of Natural Resources staff to provide in-country support of the sampling program;
- The Government of Greenland, in cooperation with the Greenland Institute of Natural Resources, agrees to provide support for the sampling program by facilitating the sampling of Atlantic salmon by the samplers identified above.

In addition, NASCO Parties agree to provide the following technical support for sample analysis and data collected at West Greenland:

- The United States agrees to provide microsatellite DNA analysis of tissue samples collected from Atlantic salmon harvested at West Greenland;

- The United States agrees to provide oversight for the processing of all collected biological samples;

- The United States agrees to report the sampling program results to the ICES North Atlantic Salmon Working Group in support of the stock assessment completed by the ICES North Atlantic Salmon Working Group;

- The United States agrees to report the sampling program results to all SALSEA partners;

- The United States agrees to coordinate the publishing of a report that details the preliminary results of the sampling program. The report will be compiled in cooperation with individuals participating in the sampling program and will be published via a participating institution's official report series;

- Canada agrees to provide ageing of scale samples collected from Atlantic salmon harvested at West Greenland;

- Canada agrees to maintain the historical West Greenland sampling database;

[1] The Republic of Ireland and the United Kingdom.
[2] For the purposes of this agreement, a person week of sampling is defined as a trained individual who works on site in West Greenland to collect samples of Atlantic salmon for a period of 7 days.

- The European Union (UK (England & Wales)) agrees to act as a clearing house for coded wire tags recovered from the fishery.

Government of Greenland Coordination Efforts:

The Government of Greenland agrees to identify a mechanism to provide sampling access to landed Atlantic salmon before grading/culling and before fish are subject to health regulations that would restrict or prohibit activities associated with sampling.

The Government of Greenland agrees to inform persons designated by cooperating NASCO Parties of important developments in the management of the West Greenland fishery including planned openings and closures of the Atlantic salmon fishery at West Greenland.

The Government of Greenland agrees to provide necessary waivers to the regulation that Atlantic salmon must be landed in a gutted condition to allow for the collection of biological samples in support of SALSEA West Greenland. To facilitate land-based collection of these biological samples, the Government of Greenland agrees to provide the necessary permits to allow for landing whole fresh salmon.

The allocation of available scientific sampling personnel will be determined annually by ICES scientists to provide spatial and temporal coverage to characterize both the fishery and the Atlantic salmon populations along the West Greenland coast. Parties participating in the cooperative sampling program will share access to resulting data and work cooperatively in the publication of information.

Annex 6

CNL(11)10

Request for Scientific Advice from ICES

1. With respect to Atlantic salmon in the North Atlantic area:

1.1 provide an overview of salmon catches and landings, including unreported catches by country and catch and release, and production of farmed and ranched Atlantic salmon in 2011[1];
1.2 report on significant new or emerging threats to, or opportunities for, salmon conservation and management[2];
1.3 provide a review of examples of successes and failures in wild salmon restoration and rehabilitation and develop a classification of activities which could be recommended under various conditions or threats to the persistence of populations;
1.4 provide a compilation of tag releases by country in 2011;
1.5 identify relevant data deficiencies, monitoring needs and research requirements.

2. With respect to Atlantic salmon in the North-East Atlantic Commission area:

2.1 describe the key events of the 2011 fisheries[3];
2.2 review and report on the development of age-specific stock conservation limits;
2.3 describe the status of the stocks;
2.4 provide catch options or alternative management advice for 2012-2015, with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[4];
2.5 further develop a risk-based framework for the provision of catch advice for the Faroese salmon fishery, providing a clear indication of the management decisions required for implementation;
2.6 further develop a framework of indicators that could be used to identify any significant change in the assessments used in previously provided multi-annual management advice;
2.7 provide advice on best practice for conducting monitoring surveys for the parasite *Gyrodactylus salaris.*

3. With respect to Atlantic salmon in the North American Commission area:

3.1 describe the key events of the 2011 fisheries (including the fishery at St Pierre and Miquelon)[3];
3.2 update age-specific stock conservation limits based on new information as available;
3.3 describe the status of the stocks;
3.4 provide catch options or alternative management advice for 2012-2015 with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[4].

4. With respect to Atlantic salmon in the West Greenland Commission area:

4.1 describe the key events of the 2011 fisheries[3];
4.2 describe the status of the stocks[5];

4.3 provide catch options or alternative management advice for 2012-2014 with an assessment of risk relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding[4];

4.4 update the framework of indicators used to identify any significant change in the previously provided multi-annual management advice;

4.5 advise on possible explanations for the variations in fishing patterns (e.g. effort, licenses and landings) observed in the Greenland fishery in recent years.

Notes:

1. *With regard to question 1.1, for the estimates of unreported catch the information provided should, where possible, indicate the location of the unreported catch in the following categories: in-river; estuarine; and coastal. Numbers of salmon caught and released in recreational fisheries should be provided.*
2. *With regard to question 1.2, ICES is requested to include reports on any significant advances in understanding of the biology of Atlantic salmon that is pertinent to NASCO, including information on any new research into the migration and distribution of salmon at sea and the potential implications of climate change for salmon management.*
3. *In the responses to questions 2.1, 3.1 and 4.1, ICES is asked to provide details of catch, gear, effort, composition and origin of the catch and rates of exploitation. For homewater fisheries, the information provided should indicate the location of the catch in the following categories: in-river; estuarine; and coastal. Any new information on non-catch fishing mortality of the salmon gear used, on the by-catch of other species in salmon gear, and on the by-catch of salmon in any existing and new fisheries for other species is also requested.*
4. *In response to questions 2.4, 3.4 and 4.3, provide a detailed explanation and critical examination of any changes to the models used to provide catch advice and report on any developments in relation to incorporating environmental variables in these models.*
5. *In response to question 4.2, ICES is requested to provide a brief summary of the status of North American and North-East Atlantic salmon stocks. The detailed information on the status of these stocks should be provided in response to questions 2.3 and 3.3.*

Annex 7

WGC(11)00

List of Papers

WGC(11)0	List of papers
WGC(11)1	Provisional Agenda
WGC(11)2	Draft Agenda
WGC(11)3	Report on the Use of the Framework of Indicators in 2011
WGC(11)4	West Greenland Fishery Sampling Agreement, 2011
WGC(11)5	Draft Report of the Twenty-Eighth Annual Meeting of the West Greenland Commission
WGC(11)6	Agenda
WGC(11)7	The 2010 Fishery at West Greenland
WGC(11)8	ICES Presentation to the West Greenland Commission
WGC(11)9	Report of the Twenty-Eighth Annual Meeting of the West Greenland Commission

Report of the ICES Advisory Committee (Sections 10.2 to 10.4 only)

10.2 Stock Summaries
10.2.1 Advice April 2011
ECOREGION North Atlantic
STOCK Atlantic Salmon from the Northeast Atlantic

Advice for 2011

On the basis of the MSY approach, ICES advises that fishing should only take place on maturing 1SW salmon and non-maturing 1SW salmon from rivers where stocks have been shown to be at full reproductive capacity. Furthermore, due to the different status of individual stocks within the stock complex, mixed-stock fisheries present particular threats to stock status. The management of a fishery should ideally be based on the status of all stocks exploited in the fishery.

Given the current abundance levels from the NEAC run–reconstruction model and associated Bayesian abundance forecasts, the following advice on management is provided for the two age groups in the Northern and Southern NEAC stock complexes (Figures 10.2.1, 10.2.2; Table 10.2.1).

- **Northern European 1SW stocks:** For 2011 to 2014, this stock is forecasted to be at risk of suffering reduced reproductive capacity prior to the commencement of distant-water fisheries. This stock complex therefore offers no mixed-stock fishing opportunities.
- **Northern European MSW stocks:** For 2011 and 2012, this stock is forecasted to be at full reproductive capacity prior to the commencement of distant-water fisheries. For 2013 and 2014, the stock is at risk of suffering reduced reproductive capacity prior to the commencement of distant-water fisheries. There are mixed-stock fishing opportunities on this stock complex only in 2011 and 2012.
- **Southern European 1SW stocks:** For 2011 to 2014, the stock is forecasted to be at risk of suffering reduced reproductive capacity prior to the commencement of distant-water fisheries. This stock complex therefore offers no mixed-stock fishing opportunities.
- **Southern European MSW stocks:** For 2010 to 2014, the stock is forecasted to be at risk of suffering reduced reproductive capacity prior to the commencement of distant-water fisheries. This stock complex therefore offers no mixed-stock fishing opportunities.

Stock status

National stocks within the NEAC area are combined into two stock groupings for the provision of management advice for the distant-water fisheries at West Greenland and Faroes. The Northern group consists of: Russia, Finland, Norway, Sweden, and the northeast regions of Iceland. The Southern group consists of: UK (Scotland), UK (England and Wales), UK (N. Ireland), Ireland, France, and the southwest regions of Iceland.

The status of stock complexes is presented relative to the abundance prior to the commencement of distant-water fisheries with respect to the spawner escapement reserve (SER) (Figure 10.2.3). Recruitment patterns of maturing 1SW salmon and of non-maturing 1SW recruits for Northern NEAC show broadly similar patterns of a general decline over the time period 1983 to 2010, interrupted by a short period of increased recruitment from 1998 to

2003. Both stock complexes have been at full reproductive capacity prior to the commencement of distant-water fisheries throughout the time-series. Recruitment patterns of maturing 1SW salmon and of non-maturing 1SW recruits for Southern NEAC show broadly similar declining trends over the time period. The maturing 1SW stock complex has been at full reproductive capacity over most of the time period. The non-maturing 1SW stock has been at full reproductive capacity over most of the time period but has been at risk of suffering reduced reproductive capacity before any fisheries took place in two (2006 and 2008) of the last four PFA years. This is broadly consistent with the general pattern of decline in marine survival in most monitored stocks in the area.

Estimated exploitation rates have generally been decreasing over the time period for both 1SW and MSW stocks in Northern and Southern NEAC areas (Fig. 10.2.4). Despite management measures aimed at reducing exploitation in recent years there has been little improvement in the status of stocks over time. This is mainly as a consequence of continuing poor survival in the marine environment attributed to climate effects.

Management plans

The North Atlantic Salmon Conservation Organization (NASCO) has adopted an Action Plan for Application of the Precautionary Approach which stipulates that management measures should be aimed at maintaining all stocks above their conservation limits by the use of management targets. Conservation limits (CLs) for North Atlantic salmon stock complexes have been defined by ICES as the level of stock (number of spawners) that will achieve long-term average maximum sustainable yield (MSY). NASCO has adopted the region-specific CLs as limit reference points (S_{lim}); having populations fall below these limits should be avoided with high probability. Advice for the Faroes fishery (both 1SW and MSW) is based on all NEAC area stocks. The advice for the West Greenland fishery is based on Southern NEAC non-maturing 1SW stock.

Biology

Atlantic salmon (*Salmo salar*) is an anadromous species found in rivers of countries bordering the North Atlantic. In the Northeast Atlantic area their current distribution extends from northern Portugal to the Pechora River in Northwest Russia and to Iceland. Juveniles emigrate to the ocean at ages one to eight years (dependent on latitude) and generally return after one or two years at sea. Long-distance migrations to ocean feeding grounds are known to take place with adult salmon from the Northeast Atlantic stocks being exploited at both West Greenland and the Faroes.

Environmental influence on the stock

Environmental conditions in both freshwater and marine environments have a marked effect on the status of salmon stocks. Across the North Atlantic, a range of problems in the freshwater environment play a significant role in explaining the poor status of stocks. In many cases river damming and habitat deterioration have had a devastating effect on freshwater environmental conditions. In the marine environment, return rates of adult salmon have declined through the 1980s and are now at the lowest levels in the time-series for some stocks, even after closure of marine fisheries. Climatic factors modifying ecosystem conditions and predator fields of salmon at sea are considered to be the main contributory factors to lower productivity, which is expressed almost entirely in terms of lower marine survival.

The fisheries

No fishery for salmon has been prosecuted at Faroes since 2000. No significant changes in gear type used were reported in 2010; however, changes in effort were recorded. The NEAC area has seen a general reduction in catches since the 1980s (Figure 10.2.5; Table 10.2.2). This reflects the decline in fishing effort as a consequence of management measures as well as a reduction in the size of stocks. The provisional total nominal catch in Northern NEAC for 2010 was 973 t, and 427 t from Southern NEAC. The catch in the Southern area, which comprised around two-thirds of the total NEAC catch in the early 1970s, has been lower than that in the Northern area since 1999 (Figure 10.2.5).

1SW salmon comprised 61% of the total catch in the Northern area in 2010, similar to the previous year (59%) and the previous 5- and 10-year means (Figure 10.2.6). For the Southern European countries, the overall percentage of 1SW fish in the catch in 2010 (60%) was equal to the previous 5- and 10-year means (59%) and has remained reasonably consistent over the time-series (range 49 to 65%), although there is considerable variability among individual countries (Figure 10.2.6).

The contribution of farmed and ranched salmon to national catches in the NEAC area was generally low in most countries, as in previous years. In Norway farmed salmon continue to form a large proportion of the catch in those fisheries which have been sampled.

Effects of the fisheries on the ecosystem

The current salmon fishery probably has no or only minor influence on the marine ecosystem. However, the exploitation rate on salmon may affect the riverine ecosystem through changes in species composition. There is limited knowledge concerning the magnitude of these effects.

Quality considerations

Uncertainties in input variables to the stock status and stock forecast models are incorporated in the assessment. Provisional catch data for 2009 were updated where appropriate and the assessment extended to include data for 2010. Revised estimates of national exploitation rates for UK (England and Wales) were provided. The number of regions used in respect of the Norway assessment were expanded from three to four by splitting the South region into Southeast and Southwest regions, in order to better reflect differences in stock status in the two regions in the overall assessment and to reflect domestic management arrangements.

Scientific basis

Assessments are carried out using common input variables across stock complexes. Run–reconstruction models and Bayesian forecasts are performed taking into account uncertainties in the data and in process error, and the results are presented in a risk analysis framework.

10.2.1 Supporting information April 2011

ECOREGION North Atlantic
STOCK Atlantic Salmon from the Northeast Atlantic

Reference points

National run–reconstruction models have been run for all countries that do not have river-specific CLs (i.e. all countries except France, Ireland, UK (England & Wales), and Norway). To provide catch options to NASCO, CLs are required for stock complexes. These have been derived either by summing the individual river CLs to national level, or by taking overall national CLs, as provided by the national model and then summing to the level of the four NEAC stock complexes. For the NEAC area, the CLs have been calculated by ICES as:

- Northern NEAC 1SW spawners – 207 231
- Northern NEAC MSW spawners – 131 456
- Southern NEAC 1SW spawners – 624 504
- Southern NEAC MSW spawners – 258 720

Outlook for 2011 to 2014

The total PFA (maturing and non-maturing 1SW salmon at January 1st of the first winter at sea) for the Southern NEAC complex ranged from 3 to 4 million fish between 1978 and 1989, declined rapidly to just over 2 million fish in 1990, and fell to its lowest level of just over 1.5 million fish in 2008 (Figure 10.2.2; Tables 10.2.3, 10.2.4). For the Northern NEAC complex, peak PFA abundance was estimated at about 2 million fish in year 2000 with the lowest value of the series in 2008 at over 1 million fish (Figure 10.2.1; Tables 10.2.3, 10.2.4).

Forecasts from these models into 2010 to 2014 for the non-maturing and maturing age group were developed within the Bayesian model framework. Probabilities that the PFAs will be above or equal to the spawner escapement reserve (SER; CL adjusted for natural mortality to Jan. 1 of the PFA year) in 2010 to 2014 from the Bayesian model are given in Table 10.2.1. Probabilities of meeting SERs are higher in the Northern complex than in the Southern complex (Table 10.2.1).

MSY approach

Atlantic salmon has characteristics of short-lived fish stocks; mature abundance is sensitive to annual recruitment because there are only a few age groups in the adult spawning stock. Incoming recruitment is often the main component of the fishable stock. For such fish stocks, the ICES MSY approach is aimed at achieving a target escapement (MSY $B_{escapement}$, the amount of biomass left to spawn). No catch should be allowed unless this escapement can be achieved. The escapement level should be set so there is a low risk of future recruitment being impaired, similar to the basis for estimating B_{pa} in the precautionary approach. In short-lived stocks, where most of the annual surplus production is from recruitment (not growth), MSY $B_{escapement}$ and B_{pa} might be expected to be similar.

Conservation limits (CLs) for North Atlantic salmon stock complexes have been defined by ICES as the level of stock (number of spawners) that will achieve long-term average maximum sustainable yield (MSY $B_{escapement}$). In some regions of NEAC, pseudo stock–recruitment observations are used to calculate a hockey stick relationship, with the inflection point defining the CLs. In the remaining regions, the CLs are calculated as the number of

spawners that will achieve long-term average maximum sustainable yield (MSY), as derived from the adult-to-adult stock and recruitment relationship.

For the assessment of the status of stocks and advice on management of national components and geographical groupings of the stock complexes in the NEAC area, where there are no specific management objectives:

- ICES requires that the lower boundary of the 95% confidence interval of the current estimate of spawners be above the CL for the stock to be considered at full reproductive capacity.
- When the lower boundary of the confidence limit is below the CL, but the midpoint is above, then ICES considers the stock to be at risk of suffering reduced reproductive capacity.
- Finally, when the midpoint is below the CL, ICES considers the stock to suffer reduced reproductive capacity.

ICES considers that to be consistent with the MSY and the precautionary approach, fisheries should only take place on maturing 1SW salmon and non-maturing 1SW salmon from rivers where stocks have been shown to be at full reproductive capacity. Furthermore, due to the different status of individual stocks within the stock complex, mixed-stock fisheries present particular threats to stock status.

Management objectives

NASCO has identified the organization's primary management objective:

"To contribute through consultation and cooperation to the conservation, restoration, enhancement and rational management of salmon stocks taking into account the best scientific advice available".

NASCO further stated that "the Agreement on the Adoption of a Precautionary Approach states that an objective for the management of salmon fisheries is to provide the diversity and abundance of salmon stocks" and NASCOs Standing Committee on the Precautionary Approach interpreted this as being "to maintain both the productive capacity and diversity of salmon stocks" (NASCO, 1998). NASCO's Action Plan for Application of the Precautionary Approach (NASCO, 1999) provides an interpretation of how this is to be achieved:

- "Management measures should be aimed at maintaining all stocks above their conservation limits by the use of management targets".
- "Socio-economic factors could be taken into account in applying the Precautionary Approach to fisheries management issues".
- "The precautionary approach is an integrated approach that requires, *inter alia*, that stock rebuilding programmes (including as appropriate, habitat improvements, stock enhancement, and fishery management actions) be developed for stocks that are below conservation limits".

NASCO has adopted the region-specific CLs (NASCO, 1998). These CLs are limit reference points (S_{lim}); having populations fall below these limits should be avoided with high probability.

Advice for the Faroes fishery (for 1SW and MSW stocks) is based on both Northern and Southern NEAC area stocks. The advice for the West Greenland fishery is based on Southern NEAC non-maturing 1SW (MSW) stock at a risk level of 75% (ICES, 2003).

Additional considerations

ICES emphasizes that the national stock CLs discussed above are not appropriate for the management of homewater fisheries, particularly where these exploit separate river stocks. This is because of the relative imprecision of the national CLs and because they will not take account of differences in the status of different river stocks or sub-river populations. Management at finer scales should take account of individual river stock status. Nevertheless, the combined CLs for the main stock groups (national stocks) exploited by the distant-water fisheries could be used to provide general management advice to the distant-water fisheries.

Fisheries on mixed-stocks pose particular difficulties for management, when they cannot target only stocks that are at full reproductive capacity. The management of a fishery should ideally be based on the status of all stocks exploited in the fishery. Conservation would be best achieved if fisheries target stocks that have been shown to be at full reproductive capacity. Fisheries in estuaries and especially rivers are more likely to meet this requirement.

There has been an overall declining trend in marine survival rates of hatchery smolts in Northern and Southern NEAC areas. Most of the survival indices for wild and reared smolts are below the previous 5- and 10-year averages. For the wild smolts the decline is also apparent for the Northern NEAC areas; however, for the Southern NEAC areas the trends are more variable (Figure 10.2.7). Comparison of survival indices for the 2008 and 2009 smolt years show a general increase for 2009 compared to 2008 for wild smolts in Northern and Southern NEAC areas. Results from these analyses are consistent with the information on estimated returns and spawners as derived from the PFA model, and suggest that returns are strongly influenced by factors in the marine environment.

For the Southern NEAC stock complex, the total PFA (maturing and non-maturing 1SW salmon at January 1st of the first winter at sea) ranged from 3 to 4 million fish between 1978 and 1989, declined rapidly to just over 2 million fish in 1990, and fell to its lowest level of just over 1.5 million fish in 2008 (Figure 10.2.2; Tables 10.2.3, 10.2.4). The productivity parameter for the maturing and non-maturing components peaked in 1985 and 1986, and there was a sharp drop in the productivity parameter during 1989 to 1991 and the median values post-1991 are all lower than during the previous time period (Figure 10.2.2). Over the entire time-series, the maturing proportions averaged about 0.6 with the lowest proportion in 1980 and the highest proportion in 1998 (Figure 10.2.2).

For the Northern NEAC complex, peak PFA abundance was estimated at about 2 million fish in year 2000 with the lowest value of the series in 2008 at over 1 million fish (Figure 10.2.1; Tables 10.2.3, 10.2.4). The proportion maturing has varied around 0.55 over the time-series but in 2007 there was an abrupt drop in the proportion maturing to below 0.37. This showed some recovery in 2008 to around 0.43. However, the level in 2009 was consistent with the previous two years, around 0.38, notably below the 1991 to 2006 level (Figure 10.2.1). The productivity increased in 2009 in the Northern NEAC complex, though remaining below pre-2004 values (Figure 10.2.1).

For the Southern NEAC stock complex, the 25th percentiles of the posterior distributions of the forecasts are below the SER for the maturing age component, with the median points just above for years 2009 to 2014, with 2011 to 2014 being forecasts (Fig. 10.2.2). For the non-maturing component the 25th percentile is just above the SER for the first forecast year (2010) and falls below it by the fifth forecast year (2014). For the Northern NEAC maturing component, the lower limit of the confidence interval has fallen below the age-specific SERs for 2010 to 2014 and the 25 percentile has remained just above (Fig. 10.2.2). For the non-maturing component of the stock, forecasts are generally above the SER but with the lower

limit of the confidence interval of forecast abundances falling below the SER in 2013 and 2014.

Scientific basis

Data and methods

PFA in the NEAC area is defined as the number of 1SW recruits on January 1st in the first sea winter. Input data to estimate the PFA are the catch in numbers of 1SW and MSW salmon in each country, unreported catch levels (minimum and maximum), and exploitation rates (minimum and maximum). Data for most countries are available beginning in 1971. In addition, catches at the Faroes and catches of NEAC origin salmon at West Greenland are incorporated. Modifications are reported in the year in which they are first implemented. The Bayesian inference and forecast models for the Southern NEAC and Northern NEAC complexes have the same structure and are run independently. For both Southern and Northern NEAC complexes, forecasts for maturing stocks were derived for 4 years of lagged spawners starting from 2011 to 2014, and for non-maturing stocks for 5 years, from 2010 to 2014.

Uncertainties in assessments and forecasts

The model estimates the PFA from the catch in numbers of 1SW and MSW salmon in each country. Uncertainties are accounted for using min and max ranges for unreported catches and exploitation rates. A natural mortality value of 0.03 (range 0.02 to 0.04) per month is applied during the second year at sea. Monte Carlo simulation is used to generate confidence limits of the eggs from spawners and the returns to each country.

Risks were defined each year as the posterior probability that the PFA would be below the age- and stock-specific SER levels. For illustrative purposes, risk analyses were derived based on the probability that the PFA abundance would be greater than or equal to the SER under the scenario of no exploitation. The results are presented as percentile summaries of the posterior distributions of the model parameters of interest.

Comparison with previous assessment and catch options

The models contained minor improvements in structure and calculation processes relative to the models used in previous years. Changes were made to the models to incorporate uncertainty around the estimates of lagged eggs and returns by sea age. Changes in model structure were also introduced: the proportion maturing parameter is modelled as a first order autocorrelated random walk and a single productivity parameter is estimated from which total PFA conditional on lagged eggs is derived. The previous version of the model was run in parallel with the revised 2011 recommended version. Differences in results were minimal. The largest differences are in the forecast values for PFA and proportion maturing, and particularly for the Northern NEAC complex (Figure 10.2.8).

Assessment and management area

National stocks are combined into Southern NEAC and Northern NEAC groups. The groups fulfilled an agreed set of criteria for defining stock groups for the provision of management advice that were considered in detail by ICES (2002) and re-evaluated by ICES (2005). Consideration of the level of exploitation of national stocks resulted in the advice for the Faroes fishery (both 1SW and MSW) being based on all NEAC area stocks, and the advice for the West Greenland fishery being based on the Southern NEAC non-maturing 1SW stock only.

Sources of information

ICES. 2001. Report of the Working Group on North Atlantic Salmon. Aberdeen, 2–11 April 2001. ICES Document CM 2001/ACFM:15. 290 pp.

ICES. 2002. Report of the Working Group on North Atlantic Salmon. ICES Headquarters, Copenhagen, 3–13 April 2002. ICES Document CM 2002/ACFM:14. 299 pp.

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ICES. 2011. Report of the Working Group on North Atlantic Salmon. ICES Headquarters, Copenhagen, 22–31 March 2011. ICES Document CM 2011/ACOM:06. 283 pp.

NASCO. 1998. North Atlantic Salmon Conservation Organization. Agreement on the adoption of a precautionary approach. Report of the 15th annual meeting of the Council. CNL(98)46. 4 pp.

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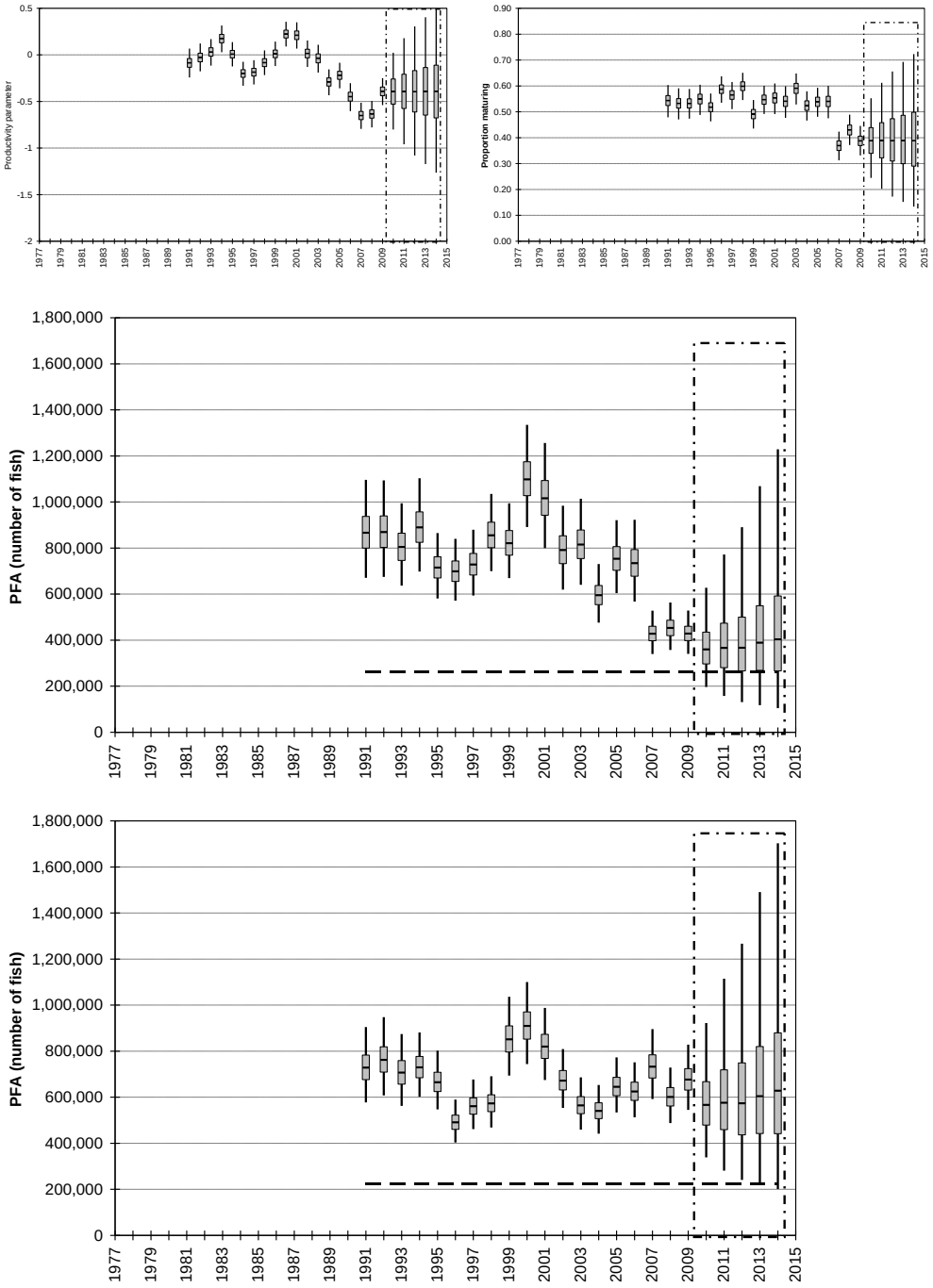

Figure 10.2.1. Estimated and forecast productivity parameters (upper left panel), proportion maturing (upper right panel), and PFA for the maturing (middle panel) and non-maturing (lower panel) stock complexes in the Northern NEAC area. The model forecast years are enclosed within the dashed boxed areas. Upper and lower bounds represent the 2.5 and 97.5 Bayesian Credibility Interval (BCI.) ranges and the boxes the 25th and 75th BCI. The horizontal dash in each rectangle is the median. The dashed horizontal line is the SER value.

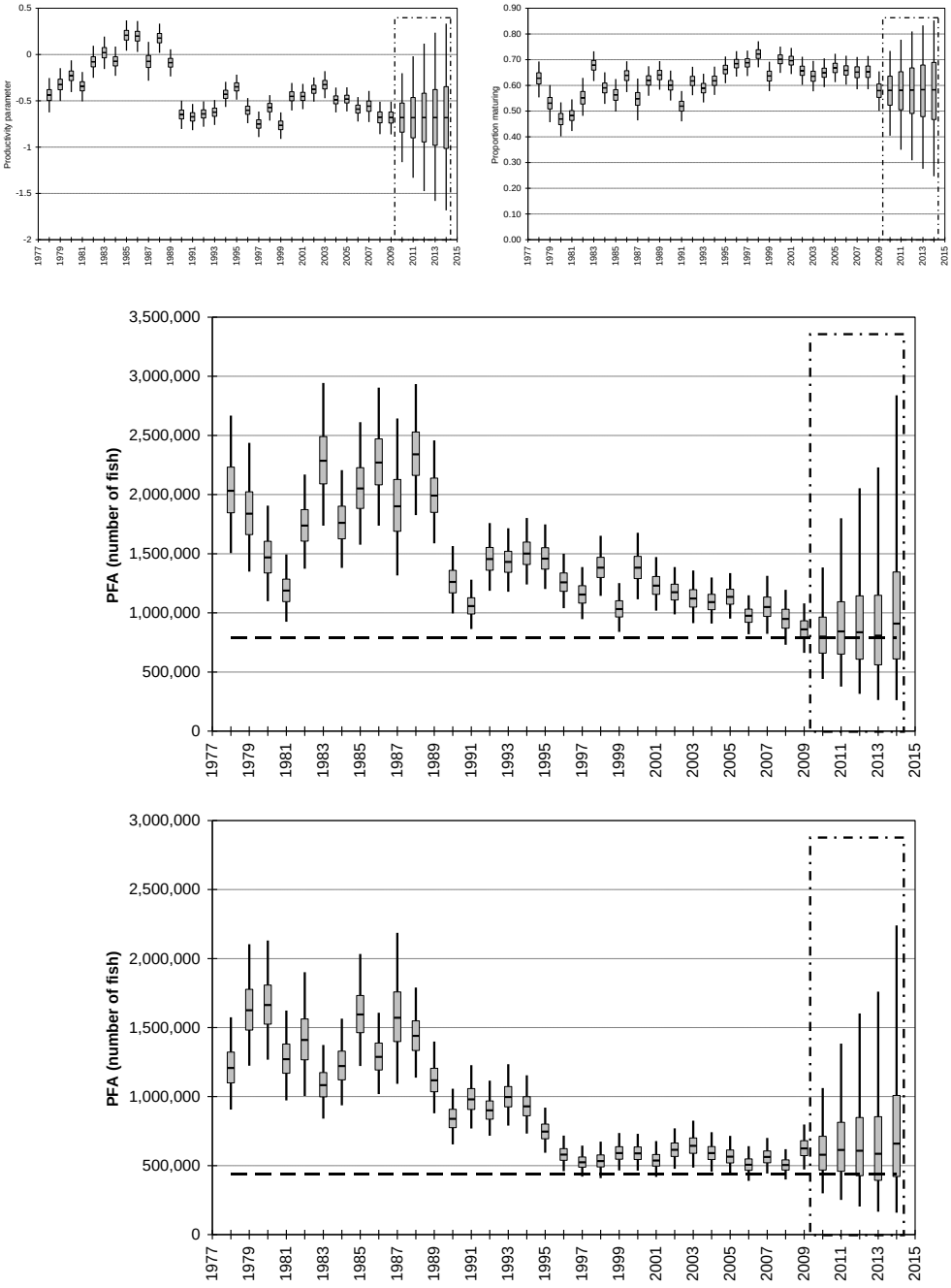

Figure 10.2.2. Estimated and forecast productivity parameters (upper left panel), proportion maturing (upper right panel), and PFA for the maturing (middle panel) and non-maturing (lower panel) stock complexes in the Southern NEAC area. The model forecast years are enclosed within the dashed boxed areas. Box plots are interpreted as in Figure 10.2.1. The dashed horizontal line is the SER value.

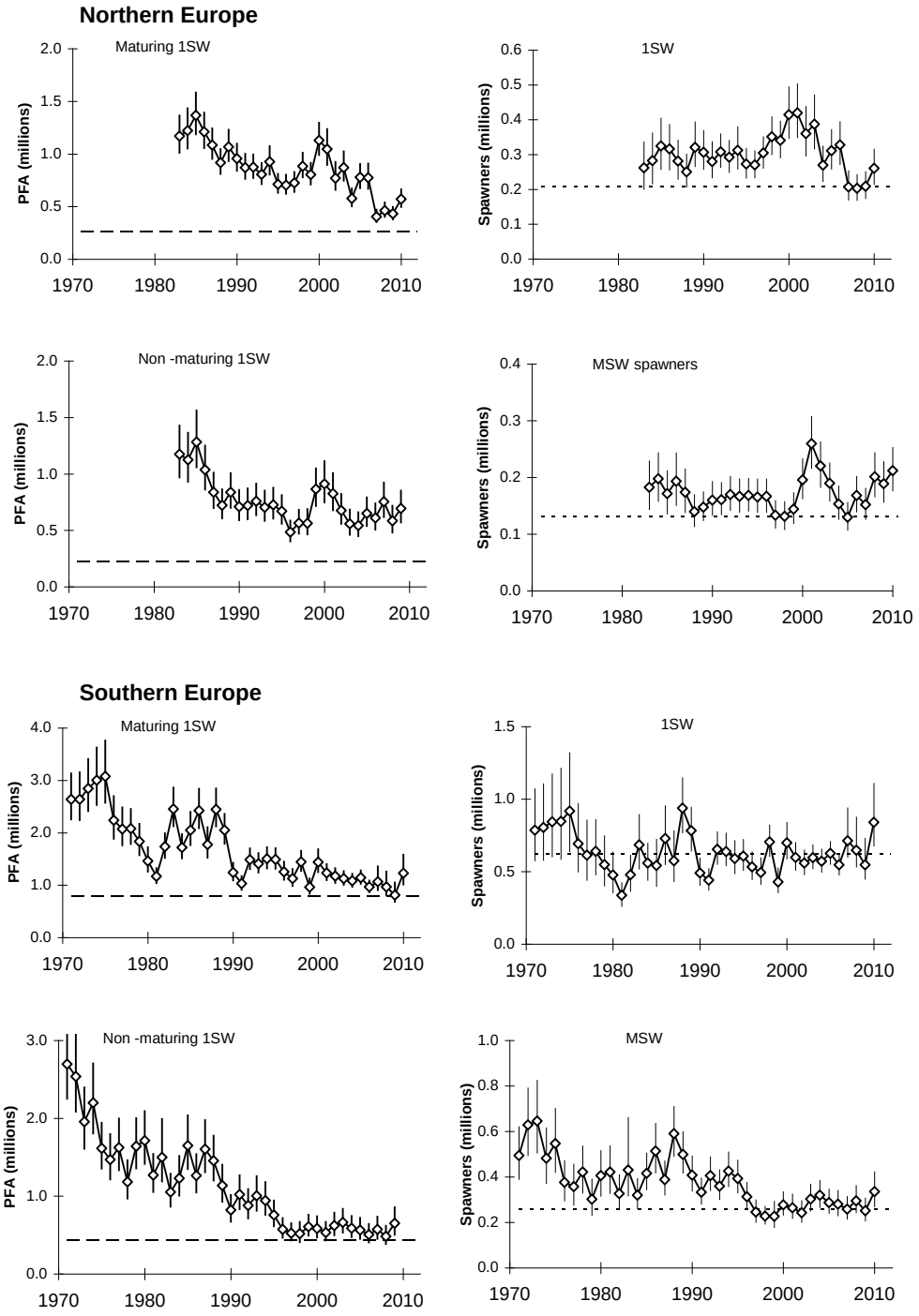

Figure 10.2.3. Estimated PFA (recruits) (left panels) and spawning escapement (right panels), with 95% confidence limits, for maturing 1SW and non-maturing 1SW salmon in Northern and Southern Europe (NEAC). The horizontal line is the spawner escapement reserve (SER, left panels) or the Conservation Limit (right panels) for the age and stock complex.

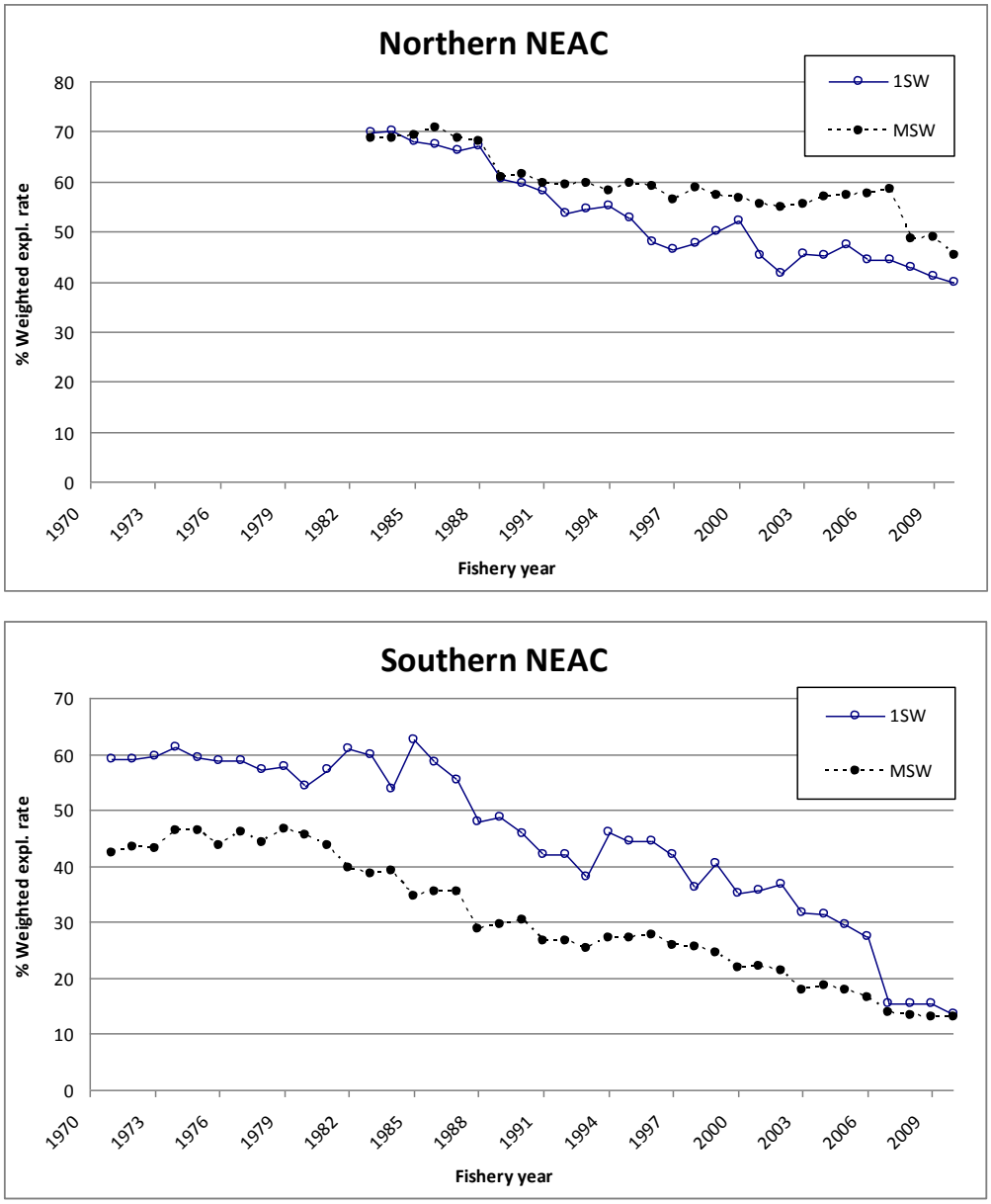

Figure 10.2.4. Exploitation rates of wild 1SW and MSW salmon by commercial and recreational fisheries in the Northern NEAC and the Southern NEAC areas from 1971 to 2010.

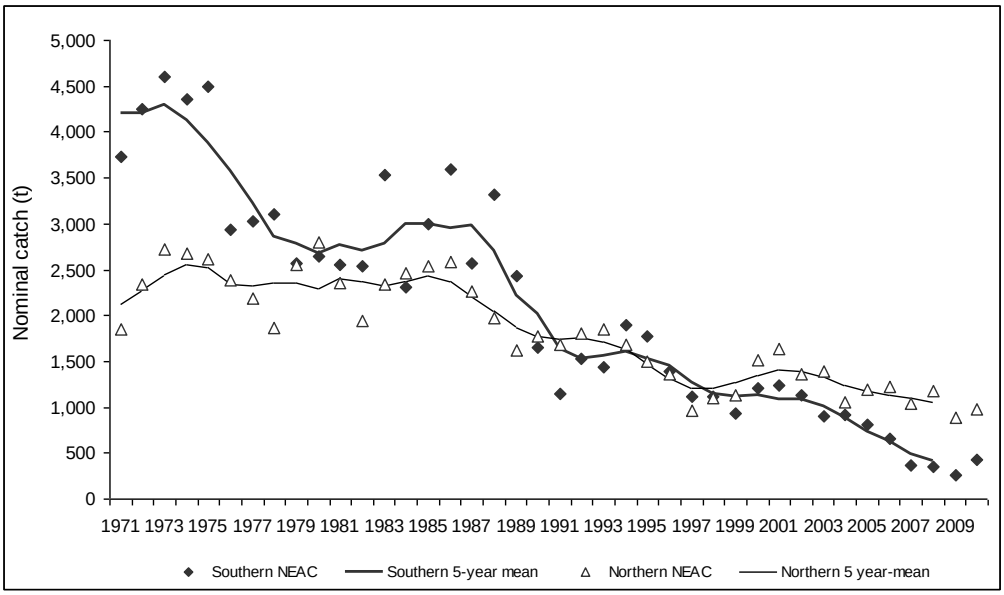

Figure 10.2.5. Nominal catch of salmon and 5-year running means in the Southern NEAC and Northern NEAC areas, 1971 to 2010.

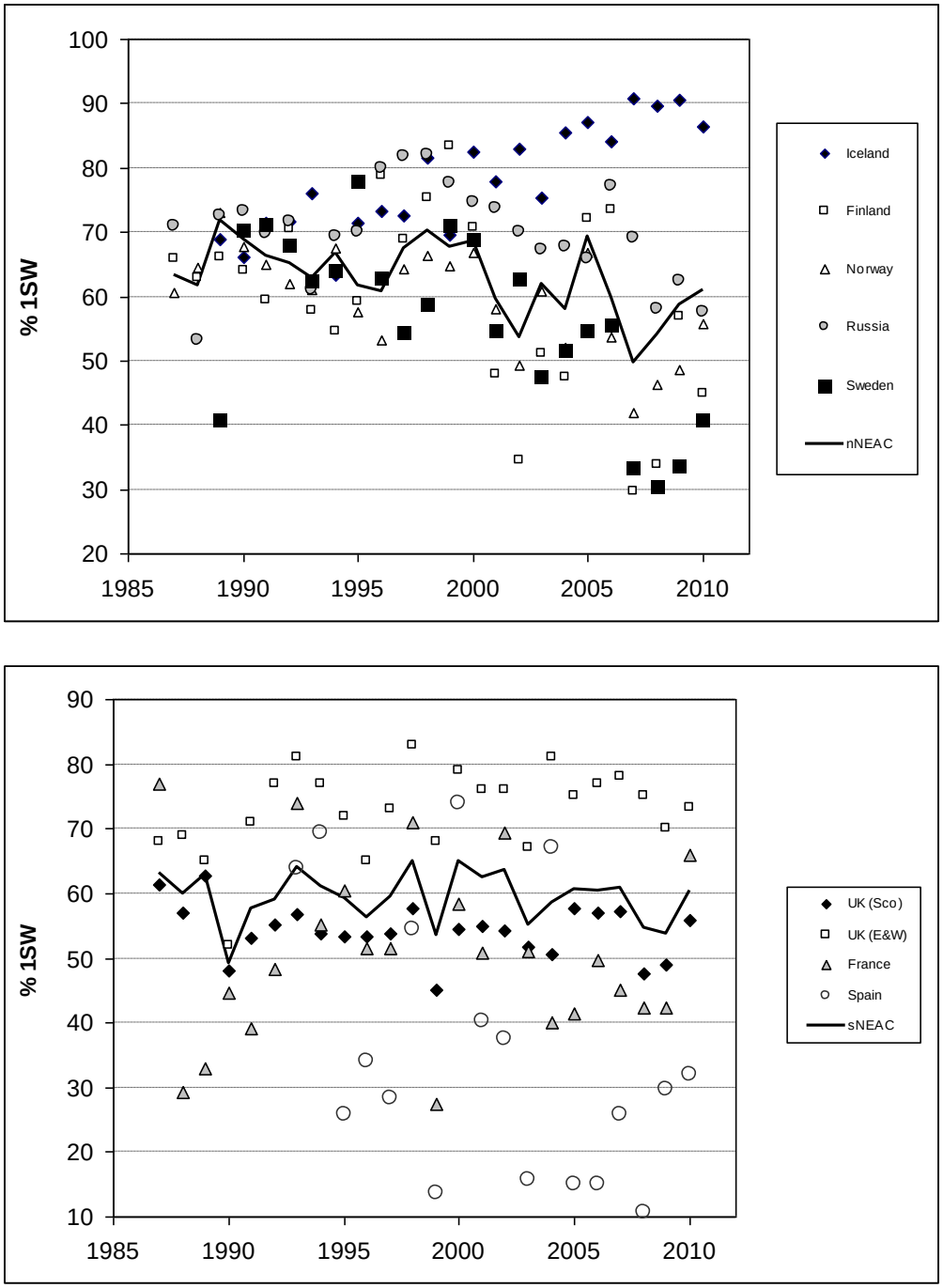

Figure 10.2.6. Percentage of 1SW salmon in the reported catch for Northern NEAC countries (upper panel) and Southern NEAC countries (lower panel), 1987 to 2010. The solid line denotes the mean value from catches in all countries within the complex.

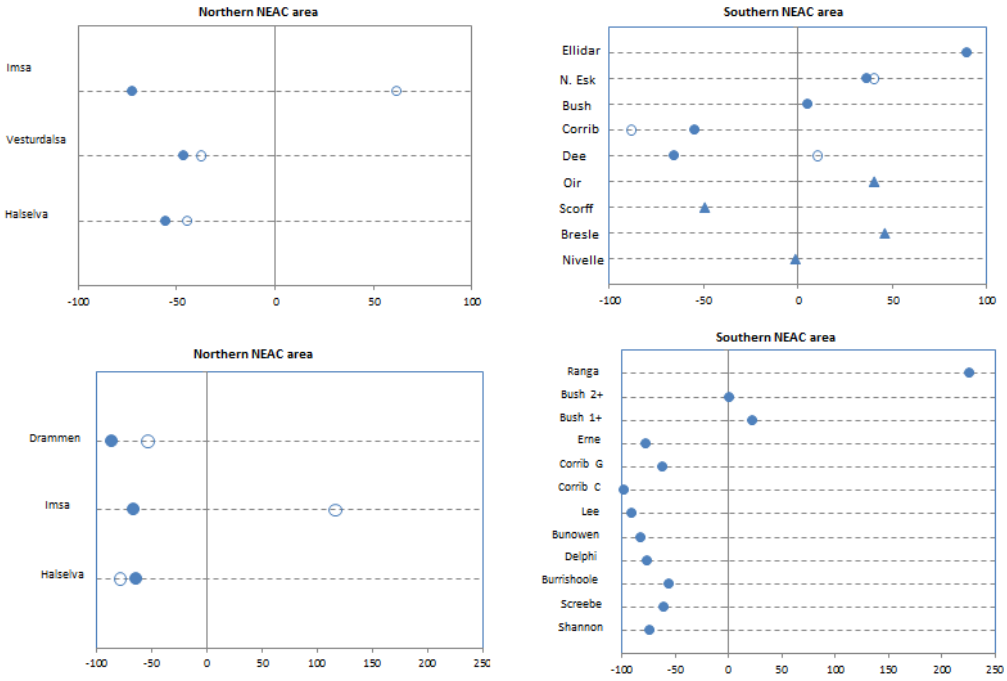

Figure 10.2.7. Comparison of the percent change in the five-year mean return rates for 1SW and 2SW salmon by wild (top) and hatchery (lower) salmon smolts to rivers of Northern and Southern NEAC areas for the 2000 to 2004 and 2005 to 2009 smolt years (1999 to 2003 and 2004 to 2008 for 2SW salmon). Filled circles are for 1SW and open circles are for 2SW data series. Triangles indicate all ages without separation into 1SW and 2SW salmon. Populations with at least 3 data points in each of the two time periods are included in the analysis. The scale of change in some rivers is influenced by low return numbers, where a few fish more or less returning may have a significant impact on the percent change.

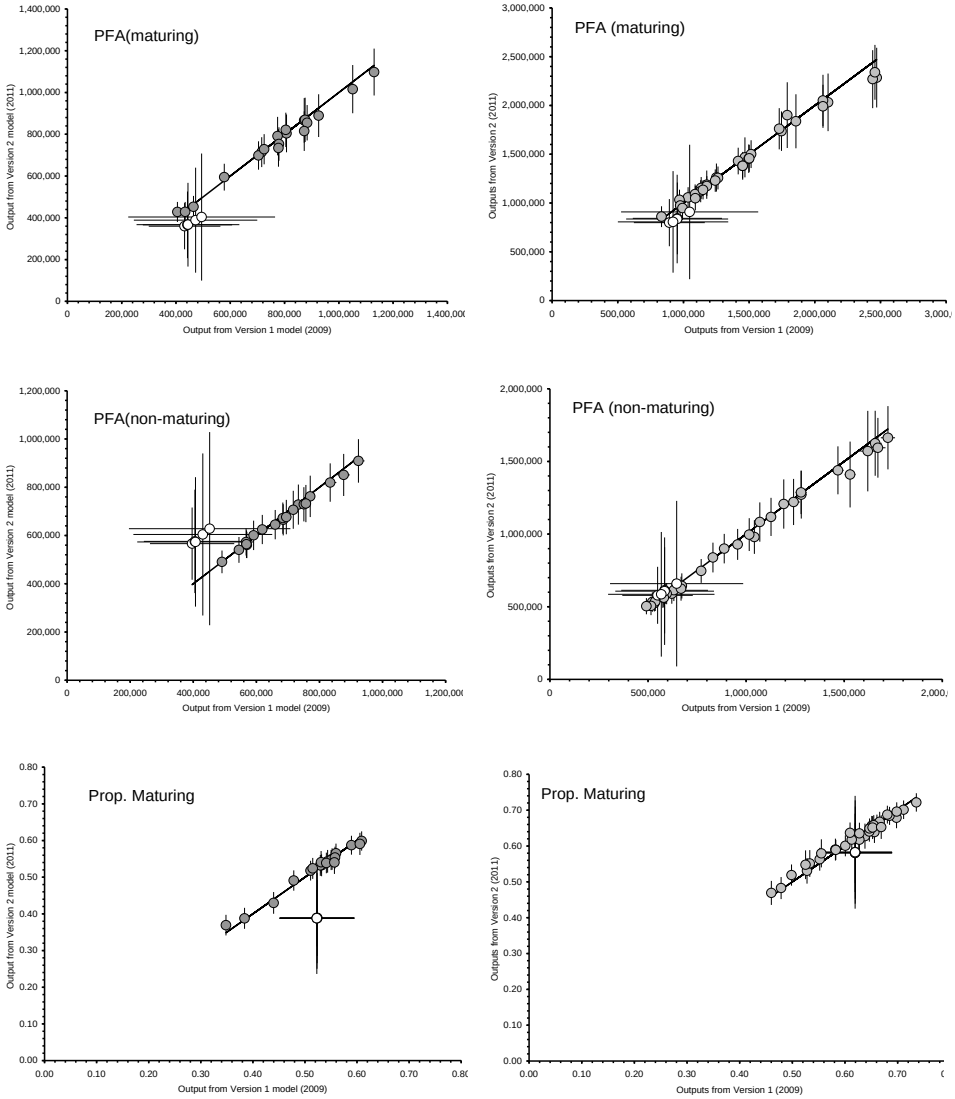

Figure 10.2.8. Comparison of outputs of revised Bayesian PFA model (y-axis) and the previous model (x-axis) for northern (left) and southern (right) NEAC stock complexes. (PFA maturing, top; PFA non-maturing, middle; proportion PFA maturing, bottom). Median and one standard deviation are shown. Grey symbols are inferences from the models, white symbols are forecasts.

Table 10.2.1. Probability (p) that the forecast PFA for Southern NEAC and Northern NEAC stock complexes will meet or exceed the spawner escapement reserve (SER) by age group in 2010 to 2014.

PROBABILITY THAT PFAS WILL BE GREATER THAN OR EQUAL TO THE COMPLEX AND AGE SPECIFIC SERS			
Southern NEAC		Maturing	Non-maturing
	SER	793 900	437 525
Year		p	p
2010		0.508	0.810
2011		0.562	0.782
2012		0.543	0.734
2013		0.512	0.688
2014		0.589	0.732
Northern NEAC		Maturing	Non-maturing
	SER	261 359	222 225
Year		p	p
2010		0.862	0.999
2011		0.800	0.994
2012		0.761	0.982
2013		0.765	0.974
2014		0.760	0.965

Table 10.2.2. Nominal catch of salmon in NEAC Area (in tonnes round fresh weight), 1960 to 2010 (2010 figures are provisional).

Year	Southern countries	Northern countries	Faroes (1)	Other catches in international waters	Total Reported Catch	Unreported catches	
						NEAC Area (3)	International waters (2)
1960	2,641	2,899	-	-	5,540	-	-
1961	2,276	2,477	-	-	4,753	-	-
1962	3,894	2,815	-	-	6,709	-	-
1963	3,842	2,434	-	-	6,276	-	-
1964	4,242	2,908	-	-	7,150	-	-
1965	3,693	2,763	-	-	6,456	-	-
1966	3,549	2,503	-	-	6,052	-	-
1967	4,492	3,034	-	-	7,526	-	-
1968	3,623	2,523	5	403	6,554	-	-
1969	4,383	1,898	7	893	7,181	-	-
1970	4,048	1,834	12	922	6,816	-	-
1971	3,736	1,846	-	471	6,053	-	-
1972	4,257	2,340	9	486	7,092	-	-
1973	4,604	2,727	28	533	7,892	-	-
1974	4,352	2,675	20	373	7,420	-	-
1975	4,500	2,616	28	475	7,619	-	-
1976	2,931	2,383	40	289	5,643	-	-
1977	3,025	2,184	40	192	5,441	-	-
1978	3,102	1,864	37	138	5,141	-	-
1979	2,572	2,549	119	193	5,433	-	-
1980	2,640	2,794	536	277	6,247	-	-
1981	2,557	2,352	1,025	313	6,247	-	-
1982	2,533	1,938	606	437	5,514	-	-
1983	3,532	2,341	678	466	7,017	-	-
1984	2,308	2,461	628	101	5,498	-	-
1985	3,002	2,531	566	-	6,099	-	-
1986	3,595	2,588	530	-	6,713	-	-
1987	2,564	2,266	576	-	5,406	2,554	-
1988	3,315	1,969	243	-	5,527	3,087	-
1989	2,433	1,627	364	-	4,424	2,103	-
1990	1,645	1,775	315	-	3,735	1,779	180-350
1991	1,145	1,677	95	-	2,917	1,555	25-100
1992	1,523	1,806	23	-	3,352	1,825	25-100
1993	1,443	1,853	23	-	3,319	1,471	25-100
1994	1,896	1,684	6	-	3,586	1,157	25-100
1995	1,775	1,503	5	-	3,283	942	-
1996	1,392	1,358	-	-	2,750	947	-
1997	1,112	962	-	-	2,074	732	-
1998	1,120	1,099	6	`	2,225	1,108	-
1999	934	1,139	0	-	2,073	887	-
2000	1,210	1,518	8	-	2,736	1,135	-
2001	1,242	1,634	0	-	2,876	1,089	-
2002	1,135	1,360	0	-	2,495	946	-
2003	908	1,394	0	-	2,302	719	-
2004	919	1,058	0	-	1,977	575	-
2005	810	1,189	0	-	1,999	605	-
2006	651	1,217	0	-	1,868	604	-
2007	372	1,036	0	-	1,407	465	-
2008	354	1,179	0	-	1,533	433	-
2009	264	893	0	-	1,158	317	-
2010	427	973	0	-	1,401	357	-
Means							
2005-2010	490	1103	0	-	1593	485	-
2000-2009	786	1248	1	-	2035	689	-

1. Since 1991, fishing carried out at the Faroes has only been for research purposes.
2. Estimates refer to season ending in given year.
3. No unreported catch estimate available for Russia since 2008.

Table 10.2.3. Estimated pre-fishery abundance (median values) of maturing 1SW salmon (potential 1SW returns) by NEAC country or region and year.

Year	Northern NEAC								Southern NEAC										NEAC Area		
	Finland	Iceland	Norway	Russia	Sweden	Total			France	Iceland	Ireland	UK(EW)	UK(NI)	UK(Scot)	Total			Total		
		N&E				2.5%	median	97.5%		S&W						2.5%	median	97.5%	2.5%	median	97.5%
1971	33,568	11,990		199,595	22,699				63,833	79,633	1,344,339	127,406	231,501	777,447	2,240,138	**2,639,297**	3,148,796				
1972	52,207	10,960		151,360	18,109				127,173	64,444	1,433,859	110,606	202,472	680,614	2,224,101	**2,639,313**	3,169,791				
1973	47,523	13,171		223,076	22,366				78,114	69,303	1,558,964	128,794	177,052	814,766	2,399,179	**2,845,967**	3,423,107				
1974	93,523	13,106		221,434	31,784				36,458	49,276	1,776,290	158,909	193,498	774,199	2,513,192	**3,001,129**	3,643,616				
1975	65,334	15,985		340,405	34,273				72,551	76,465	1,959,189	161,101	158,846	631,892	2,555,423	**3,076,889**	3,775,086				
1976	44,746	16,071		237,283	19,355				66,452	60,377	1,332,796	107,769	110,492	547,187	1,869,738	**2,236,679**	2,715,715				
1977	23,031	22,362		151,204	9,224				51,198	61,911	1,152,663	120,357	108,754	566,364	1,745,416	**2,071,851**	2,499,186				
1978	31,278	22,709		152,607	10,451				52,547	81,073	1,010,460	135,365	141,544	648,862	1,768,030	**2,079,506**	2,470,075				
1979	36,623	21,707		212,003	11,138				60,158	74,726	926,499	127,773	99,572	534,709	1,555,787	**1,835,530**	2,188,289				
1980	17,112	3,293		151,635	14,587				125,412	33,947	704,939	119,530	126,453	334,652	1,240,976	**1,462,635**	1,740,335				
1981	26,471	16,923		127,019	26,262				100,473	43,786	373,259	125,422	99,747	413,511	1,020,920	**1,168,286**	1,339,711				
1982	8,614	7,814		111,513	23,120				62,344	45,035	769,902	106,911	143,759	594,458	1,503,108	**1,734,105**	2,006,309				
1983	37,710	11,508	897,350	184,644	30,503	1,002,679	**1,170,966**	1,373,397	66,858	56,860	1,356,966	153,394	201,378	604,539	2,107,459	**2,453,350**	2,878,939				
1984	41,230	4,187	931,549	197,034	41,645	1,043,917	**1,222,316**	1,440,943	108,123	35,022	712,159	132,480	79,273	637,642	1,493,652	**1,720,485**	1,990,353	2,609,960	**2,946,155**	3,332,671	
1985	61,803	28,882	947,216	270,247	49,202	1,178,743	**1,366,475**	1,591,819	40,418	56,698	1,179,505	132,188	102,399	527,582	1,750,738	**2,049,822**	2,414,921	3,011,983	**3,421,135**	3,893,889	
1986	56,405	35,873	826,380	231,029	52,042	1,048,172	**1,210,224**	1,400,892	62,481	93,115	1,320,942	150,570	115,147	655,263	2,070,988	**2,422,680**	2,858,495	3,198,159	**3,639,142**	4,152,583	
1987	71,795	21,157	694,835	246,463	42,202	945,389	**1,085,202**	1,251,353	109,849	57,931	850,497	156,498	63,111	506,309	1,506,505	**1,775,495**	2,122,440	2,515,957	**2,865,877**	3,287,225	
1988	34,697	30,622	638,336	170,029	35,486	801,734	**916,682**	1,055,232	38,205	104,095	1,154,609	213,200	147,956	768,014	2,104,454	**2,444,158**	2,862,351	2,961,192	**3,363,662**	3,842,438	
1989	79,945	16,482	701,514	251,252	11,566	923,930	**1,067,271**	1,239,437	20,803	58,155	828,190	140,437	142,187	842,276	1,772,795	**2,047,503**	2,374,446	2,762,468	**3,118,260**	3,526,013	
1990	75,892	12,346	627,849	208,711	25,170	831,198	**955,201**	1,106,571	34,658	53,478	518,651	101,523	117,614	401,893	1,074,899	**1,240,666**	1,442,422	1,954,930	**2,199,225**	2,484,217	
1991	92,012	17,935	547,492	177,729	30,235	755,972	**871,076**	1,008,831	25,001	59,032	370,073	98,508	65,695	400,367	895,499	**1,029,655**	1,189,741	1,693,578	**1,902,914**	2,142,179	
1992	121,726	33,749	460,576	218,958	33,027	763,768	**874,122**	1,002,346	45,375	67,535	536,231	101,365	132,835	584,913	1,290,615	**1,485,983**	1,718,803	2,101,737	**2,363,095**	2,659,812	
1993	85,543	27,792	462,449	188,065	35,254	705,228	**805,436**	921,363	65,058	66,248	436,571	139,509	155,532	523,080	1,226,165	**1,407,357**	1,628,164	1,972,757	**2,214,882**	2,496,026	
1994	34,119	8,870	625,549	222,573	26,928	796,783	**926,532**	1,081,371	51,223	54,519	559,089	154,197	106,732	557,687	1,303,725	**1,502,456**	1,740,259	2,154,406	**2,431,805**	2,747,084	
1995	33,479	25,538	408,487	199,867	39,171	622,585	**713,118**	819,560	17,036	73,828	623,820	118,382	99,147	547,368	1,296,024	**1,489,803**	1,724,228	1,958,406	**2,205,316**	2,491,976	
1996	77,626	13,620	311,743	272,063	24,199	614,488	**704,009**	810,194	21,145	63,760	580,743	85,590	102,519	394,508	1,086,097	**1,256,659**	1,462,976	1,740,243	**1,963,454**	2,222,804	
1997	66,324	18,642	359,308	267,501	11,031	631,191	**725,802**	836,868	10,817	46,581	580,993	77,620	121,569	283,425	969,215	**1,127,563**	1,323,574	1,640,332	**1,855,490**	2,105,311	
1998	76,291	31,754	468,759	293,381	9,720	769,087	**884,079**	1,021,287	20,979	63,770	608,340	87,466	264,468	386,403	1,254,846	**1,443,778**	1,670,346	2,070,961	**2,330,473**	2,628,994	
1999	109,507	16,148	434,962	225,837	14,317	702,384	**804,265**	923,766	7,008	51,821	565,825	71,161	68,943	190,817	819,639	**962,348**	1,142,440	1,562,956	**1,769,578**	2,011,153	
2000	115,172	16,962	716,685	247,696	28,494	980,839	**1,130,186**	1,305,769	18,242	46,039	787,822	106,987	100,049	371,755	1,233,565	**1,440,355**	1,700,029	2,276,086	**2,575,079**	2,923,944	
2001	52,066	15,425	618,530	334,925	18,631	888,614	**1,046,625**	1,244,453	15,797	41,239	627,614	96,027	79,131	364,957	1,078,911	**1,234,783**	1,416,534	2,023,240	**2,285,301**	2,589,323	
2002	36,558	26,687	378,126	304,119	18,989	650,427	**770,858**	932,532	22,202	51,390	548,221	88,992	156,725	293,848	1,028,958	**1,172,181**	1,340,861	1,722,969	**1,946,422**	2,209,233	
2003	43,064	14,154	524,914	269,744	11,564	738,186	**869,709**	1,032,727	14,588	61,401	536,393	63,881	102,406	335,434	986,794	**1,124,848**	1,286,680	1,772,199	**1,997,307**	2,256,811	
2004	16,698	38,266	318,010	189,594	9,988	493,684	**576,612**	680,897	17,612	61,653	395,489	107,016	91,392	398,459	952,048	**1,082,342**	1,233,828	1,479,635	**1,660,943**	1,867,852	
2005	42,469	34,053	471,657	216,182	8,502	667,376	**777,963**	913,852	11,472	90,826	393,908	87,982	116,307	432,710	1,009,475	**1,143,276**	1,297,047	1,716,958	**1,923,461**	2,158,454	
2006	80,628	35,875	381,436	261,357	10,371	661,923	**774,766**	917,218	16,167	64,197	301,595	82,532	74,097	418,997	849,530	**968,800**	1,105,458	1,551,104	**1,745,817**	1,968,679	
2007	14,977	26,605	213,532	140,615	4,926	344,220	**403,646**	478,653	12,602	73,443	344,066	79,166	120,452	411,375	889,437	**1,063,690**	1,373,950	1,265,449	**1,473,697**	1,799,822	
2008	15,429	24,293	267,519	146,470	6,354	394,393	**462,835**	547,829	12,507	88,972	339,032	75,813	71,763	354,498	794,722	**967,620**	1,277,818	1,226,338	**1,437,466**	1,766,794	
2009	31,489	39,270	214,284	137,802	6,747	370,302	**431,399**	504,804	4,467	100,745	283,065	48,025	54,670	302,944	666,561	**813,528**	1,064,376	1,069,031	**1,249,930**	1,521,078	
2010	29,356	32,155	317,456	178,614	11,222	487,079	**570,981**	670,867	15,232	92,655	365,327	86,359	50,325	583,483	996,637	**1,229,576**	1,596,214	1,530,372	**1,805,369**	2,197,053	
10yr Av.	36,274	28,678	370,547	217,942	10,729	569,620	**668,539**	792,383	14,265	72,652	413,471	81,579	91,727	389,671	925,307	**1,080,064**	1,299,277	1,535,729	**1,752,571**	2,033,510	

Table 10.2.4. Estimated pre-fishery abundance (median values) of non-maturing 1SW salmon (potential MSW returns) by NEAC country or region and year.

Year	Northern NEAC								Southern NEAC									NEAC Area		
	Finland	Iceland	Norway	Russia	Sweden	Total			France	Iceland	Ireland	UK(EW)	UK(NI)	UK(Scot)	Total			Total		
		N&E				2.5%	median	97.5%		S&W					2.5%	median	97.5%	2.5%	median	97.5%
1971	63,447	26,037		270,747	7,389				56,394	63,499	401,682	394,450	31,956	1,737,264	2,238,000	**2,697,076**	3,278,712			
1972	75,289	24,377		430,928	10,289				36,185	57,263	392,656	292,373	27,945	1,720,197	2,074,687	**2,537,468**	3,129,722			
1973	111,305	22,953		398,134	7,024				20,431	49,367	407,073	212,105	30,530	1,223,221	1,597,801	**1,955,357**	2,408,376			
1974	124,416	25,382		432,411	5,851				31,557	52,473	455,991	272,140	25,087	1,347,815	1,792,981	**2,197,213**	2,717,409			
1975	102,073	20,942		368,072	6,076				27,989	45,390	344,259	182,660	17,431	989,912	1,343,482	**1,614,414**	1,951,649			
1976	62,266	28,703		254,136	4,228				19,426	44,013	280,445	180,878	17,170	920,180	1,202,108	**1,470,711**	1,808,046			
1977	39,993	36,873		217,594	3,462				20,145	56,812	250,528	158,909	22,386	1,104,584	1,321,546	**1,621,549**	2,007,060			
1978	42,514	24,532		201,287	6,357				18,623	36,579	214,993	84,500	15,697	804,645	956,389	**1,183,229**	1,473,940			
1979	44,613	34,566		351,769	13,067				35,824	51,805	256,921	223,718	19,874	1,043,026	1,345,801	**1,641,382**	2,014,102			
1980	49,010	13,261		255,209	12,978				26,310	35,413	210,785	294,099	15,568	1,120,329	1,402,163	**1,713,882**	2,104,575			
1981	63,906	14,837		228,299	16,367				17,792	25,267	140,994	136,191	22,516	921,661	1,041,062	**1,268,735**	1,554,930			
1982	69,411	11,350		280,314	12,209				17,515	41,082	297,856	139,504	31,592	931,262	1,177,728	**1,499,560**	2,001,072			
1983	65,888	13,949	819,634	258,462	11,019	961,670	**1,173,892**	1,435,324	23,380	34,605	150,913	102,392	12,430	725,766	854,352	**1,052,587**	1,300,186	1,852,501	**2,227,111**	2,681,342
1984	51,404	9,281	770,430	282,836	8,025	923,376	**1,123,813**	1,371,091	17,633	25,327	161,658	140,662	16,106	864,131	994,111	**1,228,681**	1,527,864	1,954,062	**2,356,010**	2,842,832
1985	45,047	24,182	916,753	284,288	8,843	1,050,147	**1,282,834**	1,570,128	21,661	21,389	201,943	203,971	18,110	1,175,117	1,337,677	**1,647,698**	2,047,058	2,437,365	**2,934,412**	3,543,522
1986	56,333	24,963	714,321	221,398	13,277	853,195	**1,036,102**	1,257,318	13,481	19,050	235,533	167,032	9,260	814,668	1,035,809	**1,263,337**	1,550,632	1,922,113	**2,301,197**	2,758,477
1987	36,090	16,038	568,426	202,550	10,423	689,488	**837,972**	1,019,179	28,258	21,263	172,835	201,843	26,060	1,145,106	1,295,518	**1,602,263**	1,987,717	2,018,206	**2,441,807**	2,962,013
1988	40,867	13,819	440,349	205,194	23,914	598,043	**721,085**	872,122	16,529	19,166	169,757	172,491	20,765	1,051,805	1,188,221	**1,454,780**	1,788,531	1,810,915	**2,177,409**	2,622,184
1989	51,140	14,462	505,427	253,321	16,639	691,075	**836,565**	1,014,942	12,973	18,940	81,865	184,474	18,887	813,673	916,305	**1,136,047**	1,413,802	1,635,174	**1,974,891**	2,385,648
1990	61,425	9,875	396,712	229,510	16,011	582,571	**709,642**	866,146	11,070	18,520	102,130	79,885	9,705	595,943	659,527	**820,521**	1,026,010	1,265,907	**1,530,647**	1,854,763
1991	65,555	14,505	413,816	210,460	19,298	590,169	**719,506**	879,265	14,949	20,778	85,460	68,204	22,226	808,269	821,547	**1,020,837**	1,278,176	1,437,625	**1,741,908**	2,117,635
1992	76,037	16,357	396,204	248,301	26,006	625,138	**757,768**	920,378	7,380	10,227	79,476	68,962	52,437	654,345	703,756	**879,165**	1,101,549	1,353,048	**1,638,351**	1,984,324
1993	63,065	13,879	388,222	223,091	19,190	577,165	**703,688**	859,160	12,833	16,510	114,750	86,115	18,418	752,150	800,967	**1,005,218**	1,267,692	1,404,924	**1,711,432**	2,087,870
1994	39,082	9,694	417,203	253,350	13,743	596,514	**726,396**	885,257	6,155	18,605	111,235	87,133	15,597	697,970	747,970	**941,856**	1,190,880	1,370,766	**1,669,531**	2,037,655
1995	34,537	12,680	417,311	192,771	17,330	549,841	**670,675**	818,606	11,272	12,022	77,207	89,265	17,105	545,225	602,478	**756,800**	953,711	1,175,699	**1,429,094**	1,737,052
1996	50,170	7,086	266,762	151,783	10,805	395,754	**483,867**	593,710	5,953	13,406	96,491	56,493	21,361	372,426	453,397	**573,887**	728,343	868,925	**1,058,516**	1,295,364
1997	42,196	10,325	320,487	187,736	7,969	461,929	**563,737**	689,457	4,891	8,297	55,640	34,983	29,366	389,174	418,783	**524,666**	661,513	899,161	**1,089,284**	1,322,934
1998	39,468	11,855	341,166	166,102	6,786	456,922	**562,598**	695,406	10,260	16,181	85,640	78,027	13,311	297,953	396,163	**517,113**	680,050	877,246	**1,082,289**	1,337,155
1999	87,916	6,949	473,482	289,171	14,913	707,283	**865,633**	1,056,320	7,160	4,406	107,059	82,735	17,774	380,048	480,581	**607,701**	772,504	1,214,699	**1,474,241**	1,789,584
2000	126,433	7,967	556,908	204,234	17,920	740,548	**910,342**	1,119,821	8,439	7,711	95,995	87,069	13,060	363,648	458,399	**584,594**	751,166	1,229,196	**1,497,470**	1,824,682
2001	101,296	7,538	483,326	222,969	13,143	670,161	**824,885**	1,015,620	6,319	8,360	110,681	81,070	15,512	299,839	419,029	**531,821**	678,757	1,114,241	**1,358,440**	1,655,711
2002	71,877	7,921	427,028	155,807	14,985	550,711	**676,114**	830,048	9,013	13,349	116,198	93,541	10,145	369,366	485,399	**622,286**	799,444	1,062,093	**1,300,022**	1,592,159
2003	34,476	7,793	387,090	120,194	10,859	452,206	**558,426**	691,341	16,729	10,791	64,038	75,908	9,073	478,161	519,681	**663,030**	848,011	997,063	**1,223,113**	1,502,530
2004	26,655	9,657	356,320	144,014	8,239	441,256	**541,469**	667,795	10,296	9,527	82,737	88,501	11,514	377,096	463,246	**588,150**	753,760	926,420	**1,131,615**	1,389,071
2005	46,693	9,264	451,774	137,669	8,235	530,529	**649,881**	799,222	10,336	7,908	59,937	75,766	7,345	392,072	439,575	**565,187**	730,821	996,516	**1,216,600**	1,491,198
2006	66,447	8,910	384,673	142,612	11,380	499,332	**610,195**	745,369	9,856	4,867	27,374	69,734	10,089	377,021	392,415	**505,593**	654,948	914,377	**1,117,142**	1,365,634
2007	63,200	11,472	443,385	225,283	16,225	609,498	**752,882**	932,070	10,825	5,573	40,666	77,539	6,115	422,474	441,004	**573,062**	747,179	1,081,739	**1,327,677**	1,633,110
2008	29,441	9,235	346,929	190,698	14,691	473,237	**584,885**	725,085	5,680	8,339	45,512	56,693	7,982	352,762	373,212	**484,500**	631,205	871,942	**1,070,784**	1,319,194
2009	46,597	14,616	382,467	243,537	18,074	562,345	**694,437**	859,538	4,775	10,715	31,084	99,018	7,335	486,579	492,763	**651,522**	867,649	1,087,326	**1,349,104**	1,676,653
10yr Av.	61,311	9,437	421,990	178,702	13,375	552,982	**680,351**	838,591	9,227	8,714	67,422	80,484	9,817	391,902	448,472	**576,975**	746,294	1,028,091	**1,259,197**	1,544,994

10.2.2 Advice April 2011

ECOREGION North Atlantic
STOCK Atlantic Salmon from North America

Advice for 2011

Because the NASCO Framework of Indicators of North American stocks for 2010 did not indicate the need for a revised analysis of catch options, no new management advice for 2011 is provided. The most recent multi-year advice for the North America Commission was provided by ICES (2009). In that assessment, no catch options for 2009 to 2012 in North America were consistent with the management objectives defined for this stock unit.

Stock status

Estimates of pre-fishery abundance suggest continued low abundance of North American adult salmon (Figure 10.3.1). In 2010, the estimated PFA of 1SW maturing salmon ranks 28th out of the 40-year time-series and the estimated PFA of 1SW non-maturing salmon ranks 37th out of the 39-year time-series. Egg depositions by all sea-ages combined in 2010 exceeded or equalled the river-specific CLs in 31 of the 71 assessed rivers (44%) and were less than 50% of CLs in 19 other rivers (37%) (Figure 10.3.2). In 2010, 2SW spawner estimates for the six geographic areas indicated that all areas were below their conservation limit and are suffering reduced reproductive capacity (Figures 10.3.3, 10.3.4). Particularly large deficits are noted in the Bay of Fundy, Atlantic coast, and USA. Despite major changes in fisheries management 18 to 25 years ago and increasingly more restrictive fisheries measures since, returns in these regions have remained near historical lows and many populations are currently threatened with extirpation. The continued low abundance of salmon stocks across North America, despite significant fishery reductions, further strengthens the conclusions that factors other than fisheries are constraining production.

Management plans

The North Atlantic Salmon Conservation Organization (NASCO) has adopted an Action Plan for Application of the Precautionary Approach which stipulates that management measures should be aimed at maintaining all stocks above their conservation limits by the use of management targets. NASCO has adopted the region-specific CLs as limit reference points (S_{lim}); having populations fall below these limits should be avoided with high probability. Within the agreed management plan, a risk level of 75% has been agreed for the provision of catch advice on 2SW salmon exploited at West Greenland (as non-maturing 1SW fish) and in North America as non-maturing 1SW and 2SW salmon.

Biology

Atlantic salmon (*Salmo salar*) is an anadromous species found in rivers of countries bordering the North Atlantic. In the Northwest Atlantic they range from the Connecticut River (USA, 41.6°N) northward to 58.8°N (Quebec, Canada). Juveniles emigrate to the ocean at ages one to eight years (dependent on latitude) and generally return after one or two years at sea. Long-distance migrations to ocean feeding grounds are known to take place with adult salmon from both the North American and Northeast Atlantic stocks migrating to West Greenland to feed in their second summer and fall at sea.

Environmental influence on the stock

Environmental conditions in both freshwater and marine environments have a marked effect on the status of salmon stocks. Across the North Atlantic, a range of problems in the freshwater environment play a significant role in explaining the poor status of stocks. In many cases river damming and habitat deterioration have had a devastating effect on freshwater environmental conditions. In the marine environment, return rates of adult salmon have declined through the 1980s and are now at the lowest levels in the time-series for some stocks, even after closure of marine fisheries. Climatic factors modifying ecosystem conditions and predator fields of salmon at sea are considered to be the main contributory factors to lower productivity which is expressed almost entirely in terms of lower marine survival.

The fisheries

Three groups exploited salmon in Canada; Aboriginal peoples, residents fishing for food in Labrador, and recreational fishers. The provisional harvest of salmon by all users was 146 (Table 10.3.1). The dramatic decline in harvested tonnage since 1988 is in large part the result of the reductions in commercial fisheries effort; the closure of the insular Newfoundland commercial fishery in 1992, the closure of the Labrador commercial fishery in 1998, and the closure of the Québec commercial fishery in 2000 (Figure 10.3.5). All commercial fisheries for Atlantic salmon remained closed in Canada in 2010 and the catch therefore was zero. The total reported harvests for the Aboriginal peoples' food fisheries was 59.3 t, 2.3 t for residents fishing for food in Labrador, and 84 t (about 44 100 small and large salmon) were harvested in the recreational fisheries. In 2010, approximately 58 300 salmon (about 35 600 small and 22 700 large) were caught and released by recreational fishers, representing about 62% of the total number caught (including retained fish). France (Islands of Saint-Pierre and Miquelon) reported a total harvest of 2.8 t in the professional and recreational fisheries in 2010 (Table 10.3.1). There are no commercial or recreational fisheries for Atlantic salmon in USA (Table 10.3.1).

Effects of the fisheries on the ecosystem

The current salmon fishery probably has no or only minor influence on the marine ecosystem. However, the exploitation rate on salmon may affect the riverine ecosystem through changes in species composition. There is limited knowledge concerning the magnitude of these effects.

Quality considerations

Uncertainties in input variables to the stock status and stock forecast models are incorporated in the assessment. Because of absence of catch data from some regions in Canada, the values were estimated based on historical exploitation rates. Estimates of abundance of adult salmon in some areas, in particular Labrador, are based on a small number of counting facilities raised to a large production area.

Scientific basis

Assessments are carried out using common input variables across stock complexes. Run–reconstruction models and Bayesian forecasts are performed taking into account uncertainties in the data.

10.3.1 Supporting information April 2011

ECOREGION North Atlantic
STOCK Atlantic Salmon from North America

Reference points

Conservation limits for 2SW salmon to North America total 152 548 fish.

COUNTRY AND COMISSION AREA	STOCK AREA	2SW SPAWNER REQUIREMENT
	Labrador	34 746
	Newfoundland	4022
	Gulf of St. Lawrence	30 430
	Québec	29 446
	Scotia-Fundy	24 705
Canada Total		123 349
USA		29 199
North American Total		152 548

Outlook for 2011

No outlook is provided relative to the North American stock because the Framework of Indicators of North American stocks for 2010 did not indicate the need for a re-assessment for 2011.

MSY approach

Atlantic salmon has characteristics of short-lived fish stocks; mature abundance is sensitive to annual recruitment because there are only a few age groups in the adult spawning stock. Incoming recruitment is often the main component of the fishable stock. For such fish stocks, the ICES MSY approach is aimed at achieving a target escapement (MSY $B_{escapement}$, the amount of biomass left to spawn). No catch should be allowed unless this escapement can be achieved. The escapement level should be set so there is a low risk of future recruitment being impaired, similar to the basis for estimating B_{pa} in the precautionary approach. In short-lived stocks, where most of the annual surplus production is from recruitment (not growth), MSY $B_{escapement}$ and B_{pa} might be expected to be similar.

Conservation limits (CLs) for North Atlantic salmon stock complexes have been defined by ICES as the level of stock (number of spawners) that will achieve long-term average maximum sustainable yield (MSY $B_{escapement}$). It should be noted that this is equivalent to the ICES B_{MSY} and B_{pa} as applied to short-lived stocks. Therefore, stocks are regarded by ICES as being at full reproductive capacity only if they are above MSY $B_{escapement}$, or above CLs.

ICES considers that to be consistent with the MSY and the precautionary approach, fisheries should only take place on maturing 1SW salmon and non-maturing 1SW salmon from rivers where stocks have been shown to be at full reproductive capacity. Furthermore, due to the different status of individual stocks within the stock complex, mixed-stock fisheries present particular threats to stock status.

Management objectives

NASCO has identified the organization's primary management objective:

"To contribute through consultation and cooperation to the conservation, restoration, enhancement and rational management of salmon stocks taking into account the best scientific advice available".

NASCO further stated that "the Agreement on the Adoption of a Precautionary Approach states that an objective for the management of salmon fisheries is to provide the diversity and abundance of salmon stocks" and NASCOs Standing Committee on the Precautionary Approach interpreted this as being "to maintain both the productive capacity and diversity of salmon stocks" (NASCO, 1998). NASCO's Action Plan for Application of the Precautionary Approach (NASCO, 1999) provides an interpretation of how this is to be achieved:

- "Management measures should be aimed at maintaining all stocks above their conservation limits by the use of management targets".
- "Socio-economic factors could be taken into account in applying the Precautionary Approach to fisheries management issues".
- "The precautionary approach is an integrated approach that requires, inter alia, that stock rebuilding programmes (including as appropriate, habitat improvements, stock enhancement, and fishery management actions) be developed for stocks that are below conservation limits".

NASCO has adopted the region-specific CLs (NASCO, 1998). These CLs are limit reference points (S_{lim}); having populations fall below these limits should be avoided with high probability.

The advice for the fisheries on 2SW salmon in North America is based on achieving management objectives at a risk level of 75% (ICES, 2003). For the North American Commission, the management objective is to simultaneously meet or exceed, at a risk level of 75%, the 2SW CLs in the four northern areas (Labrador, Newfoundland, Quebec, Gulf) and to achieve a 25% increase in regional returns relative to a baseline period for the two southern regions (Scotia-Fundy, USA) (ICES, 2003).

Additional considerations

Fisheries on mixed stocks pose particular difficulties for management, when they cannot target only stocks that are at full reproductive capacity. The management of a fishery should ideally be based on the status of all stocks exploited in the fishery. Conservation would be best achieved if fisheries target stocks that have been shown to be at full reproductive capacity. Fisheries in estuaries and especially rivers are more likely to meet this requirement.

Most catches (95%) in North America now take place in rivers or in estuaries. Fisheries are principally managed on a river-by-river basis and, in areas where retention of large salmon is allowed, it is closely controlled. The commercial fisheries are now closed and the remaining coastal food fisheries in Labrador are mainly located close to river mouths and likely harvest few salmon from other than local rivers. The coastal fishery in St Pierre & Miquelon (SPM) is a mixed-stock fishery which catches salmon from stocks in Canada and USA. There are no salmon-producing rivers in SPM.

Recreational catch statistics for Atlantic salmon are not collected regularly in Canada and there is no mechanism in place that requires anglers to report their catch statistics, except in Québec. The reliability of recreational catch statistics could be improved in all areas of Canada.

It would be desirable to resolve the outstanding issues regarding stock origin of the salmon caught in the estuarine and coastal fisheries at Labrador and in St Pierre & Miquelon. Genetic analysis techniques offer the opportunity to identify the origin of harvested individuals at varying levels of origin and can provide the information necessary to evaluate the effect that these mixed-stock fisheries have on the contributing populations. Appropriate baselines that represent all populations subjected to the fishery are required to support these analyses.

Exploitation rates of both small and large salmon fluctuated annually but remained relatively steady until 1984 when exploitation of large salmon declined sharply with the introduction of the non-retention of large salmon in angling fisheries and reductions in commercial fisheries (Figure 10.3.6). Exploitation of small salmon declined steeply in North America with the closure of the Newfoundland commercial fishery in 1992. Declines continued in the 1990s with continuing management controls in all fisheries to reduce exploitation. In the last few years, exploitation rates on small salmon and large salmon have remained at the lowest in the time-series, an average of 15% for both small salmon and large salmon over the past ten years. However, exploitation rates across regions within North America are highly variable.

The returns of 2SW fish in 2010 decreased from 2009 in Labrador (65%), Newfoundland (51%), Gulf (14%), Scotia-Fundy (11%), and USA (21%), and increased in Québec (7%). Returns in 2010 of 1SW salmon relative to 2009 increased in all areas with a range of 3% in Labrador and Newfoundland to 251% in Scotia-Fundy. Returns of 1SW salmon (3 to 65%) were also above the previous 5-year mean (2005 to 2009) in all regions except for Labrador (50% decrease).

The rank of the estimated returns in the 1971 to 2010 time-series and the proportions of the 2SW CL achieved in 2010 for six regions in North America are shown below:

	Rank of 2010 returns in 1971 to 2010, (40=LOWEST)		Rank of 2010 returns in 2001 to 2010 (10=LOWEST)		Median estimate of 2SW spawners as percentage of Conservation Limit
Region	1SW	2SW	1SW	2SW	(%)
Labrador	15	29	8	10	25
Newfoundland	5	37	3	10	53
Québec	22	31	5	3	77
Gulf	16	34	2	8	61
Scotia-Fundy	28	37	2	7	8
USA	12	33	2	5	5

Scientific basis

Data and methods

The returns for individual river systems and management areas for both sea-age groups were derived from a variety of methods. These methods included counts of salmon at monitoring facilities, population estimates from mark–recapture studies, and applying angling and commercial catch statistics, angling exploitation rates, and measurements of freshwater habitat. The 2SW component of the large returns was determined using the sea-age composition of one or more indicator stocks. Returns of small (1SW), large, and 2SW salmon (a subset of large) to each region were originally estimated by the methods and variables developed by Rago *et al*. (1993) and reported by ICES (1993).

Returns are the number of salmon that returned to the geographic region, including fish caught by homewater commercial fisheries, except in the case of the Newfound-land and

Labrador regions where returns do not include landings in commercial and food fisheries. This avoided double counting fish because commercial catches in Newfoundland and Labrador and food fisheries in Labrador were added to the sum of regional returns to create the PFA of North American salmon.

Total returns of salmon to USA rivers are the sum of trap catches and redd-based es-timates.

Uncertainties in assessments and forecasts

To date, 1082 Atlantic salmon rivers have been identified in eastern Canada and 21 rivers in eastern USA, where salmon are or were present within the last half century. Conservation requirements in terms of eggs have been defined for 45% (485) of the 1082 rivers in Canada. For rivers with conservation requirements, over 59% of them have conservation requirements less than 1 million eggs, which translates to roughly 200 to 300 spawners depending on life-history type. Collectively, 91% of the rivers have conservation requirements less than five million eggs. Assessments were reported for 71 of these rivers in 2010.

Recreational catch statistics for Atlantic salmon are not collected regularly in Canada and there is no mechanism in place that requires anglers to report their catch statis-tics, except in Québec. The reliability of recreational catch statistics could be improved in all areas of Canada.

The unreported catch estimate for Canada is incomplete. The reports received from three of the four administrative regions totals 15 t in 2010. A large part of this unre-ported catch is illegal fisheries directed at salmon.

Comparison with previous assessment and catch options

The NASCO Framework of Indicators of North American stocks for 2010 did not indicate the need for a revised analysis of catch options and no new management advice for 2011 is provided. The assessment was updated to 2010 and the stock status was consistent with the previous year's assessment.

Assessment and management area

The advice for the North America Commission is based on the objectives defined by management in six geographic areas of North America (Figure 10.3.4).

Sources of information

ICES. 1993. Report of the Working Group on North Atlantic Salmon. ICES Headquarters, Copenhagen, 5–12 March 1993. ICES Document CM 1993/Assess: 10.

ICES. 2003. Report of the Working Group on North Atlantic Salmon. ICES Headquarters, Copenhagen, 31 March–10 April 2003. ICES Document CM 2003/ACFM:19. 297 pp.

ICES. 2009. Report of the Working Group on North Atlantic Salmon. ICES Headquarters, Copenhagen, 30 March–8 April 2009. ICES Document CM 2009/ACFM:06. 283 pp.

ICES. 2011. Report of the Working Group on North Atlantic Salmon. ICES Headquarters, Copenhagen, 22–31 March 2011. ICES Document CM 2011/ACOM:06. 283 pp.

NASCO. 1998. North Atlantic Salmon Conservation Organization. Agreement on the adoption of a precautionary approach. Report of the 15th annual meeting of the Council. CNL(98)46. 4 pp.

NASCO. 1999. North Atlantic Salmon Conservation Organization. Action plan for the application of the precautionary approach. CNL(99)48. 14 pp.

Rago, P. J., Reddin, D. G., Porter, T. R., Meerburg, D. J., Friedland, K. D., and Potter, E. C. E. 1993. A continental run reconstruction model for the non-maturing component of North American Atlantic salmon: analysis of fisheries in Greenland and Newfoundland Labrador, 1974–1991. ICES Document CM 1993/M:25.

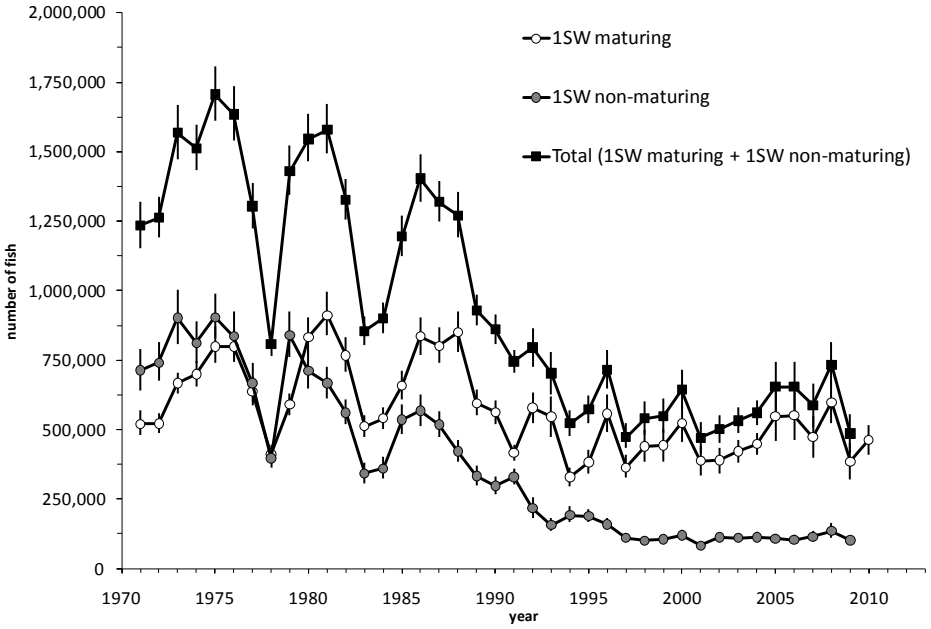

Figure 10.3.1. Estimates of PFA for 1SW maturing, 1SW non-maturing salmon, and the total cohort of 1SW salmon based on the Monte Carlo simulations of the run–reconstruction model for NAC. Median and 95% CI interval ranges derived from Monte Carlo simulations are shown.

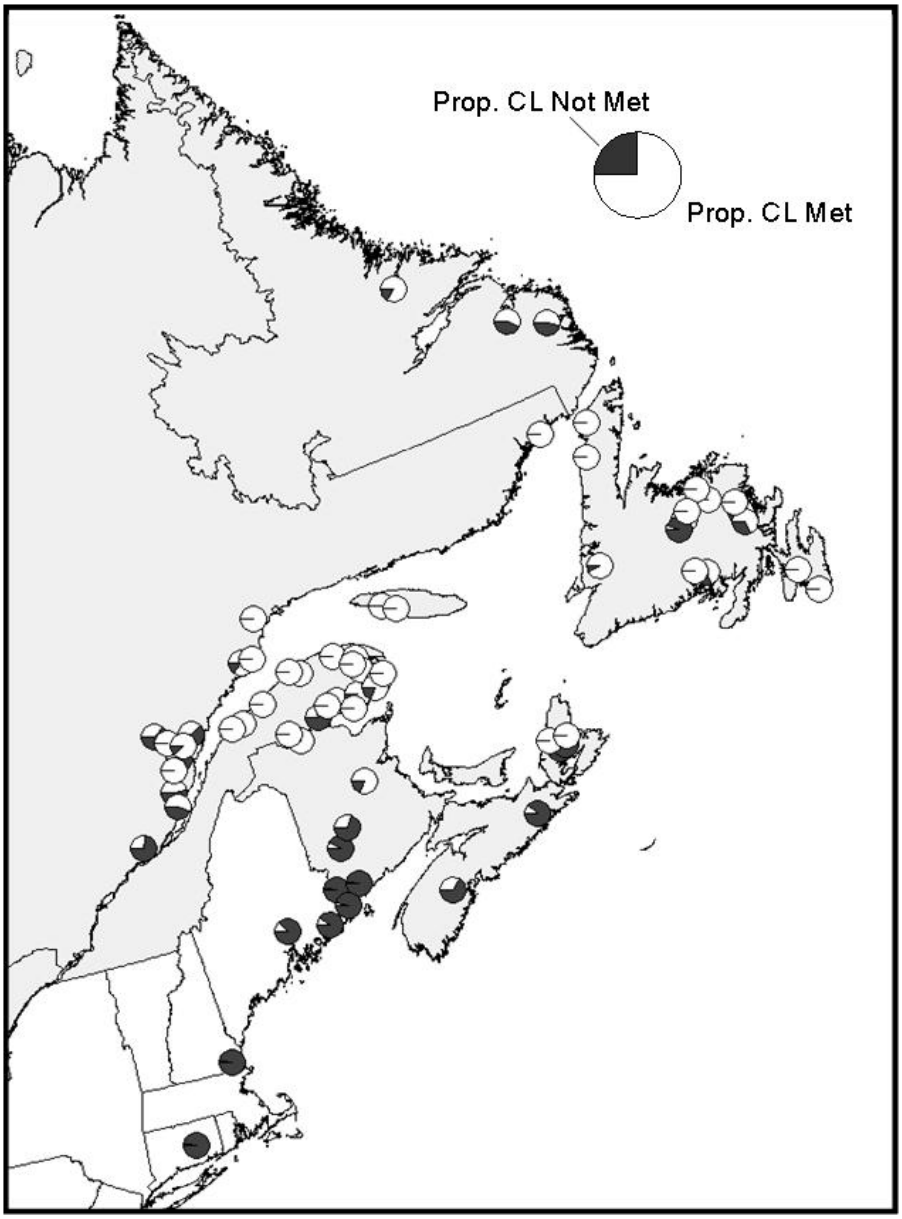

Figure 10.3.2. Proportion of the conservation requirement attained in assessed rivers of the North American Commission area in 2010.

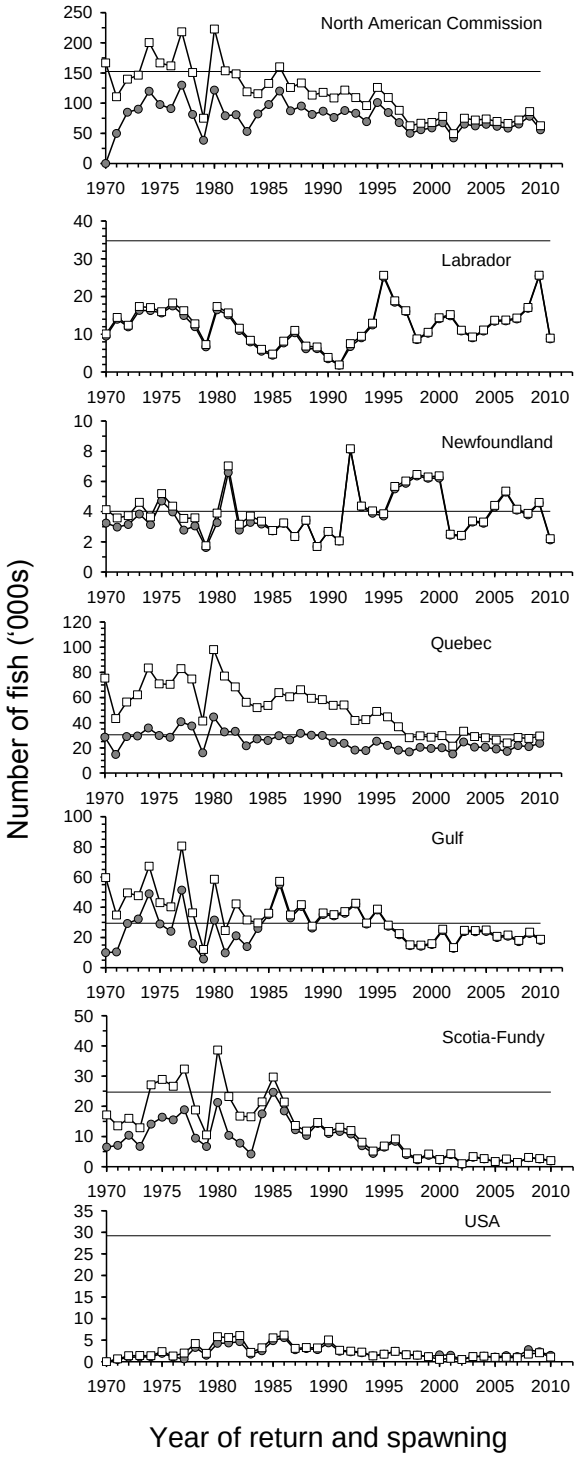

Figure 10.3.3. Comparison of the 2SW conservation limits (horizontal line), estimates (medians) of 2SW returns (squares), and 2SW spawners (circles) in six geographic areas of North America. Returns and spawners for Scotia-Fundy do not include those from SFA 22 and a portion of SFA 23. For USA, estimated spawners exceed the estimated returns due to adult stocking restoration efforts.

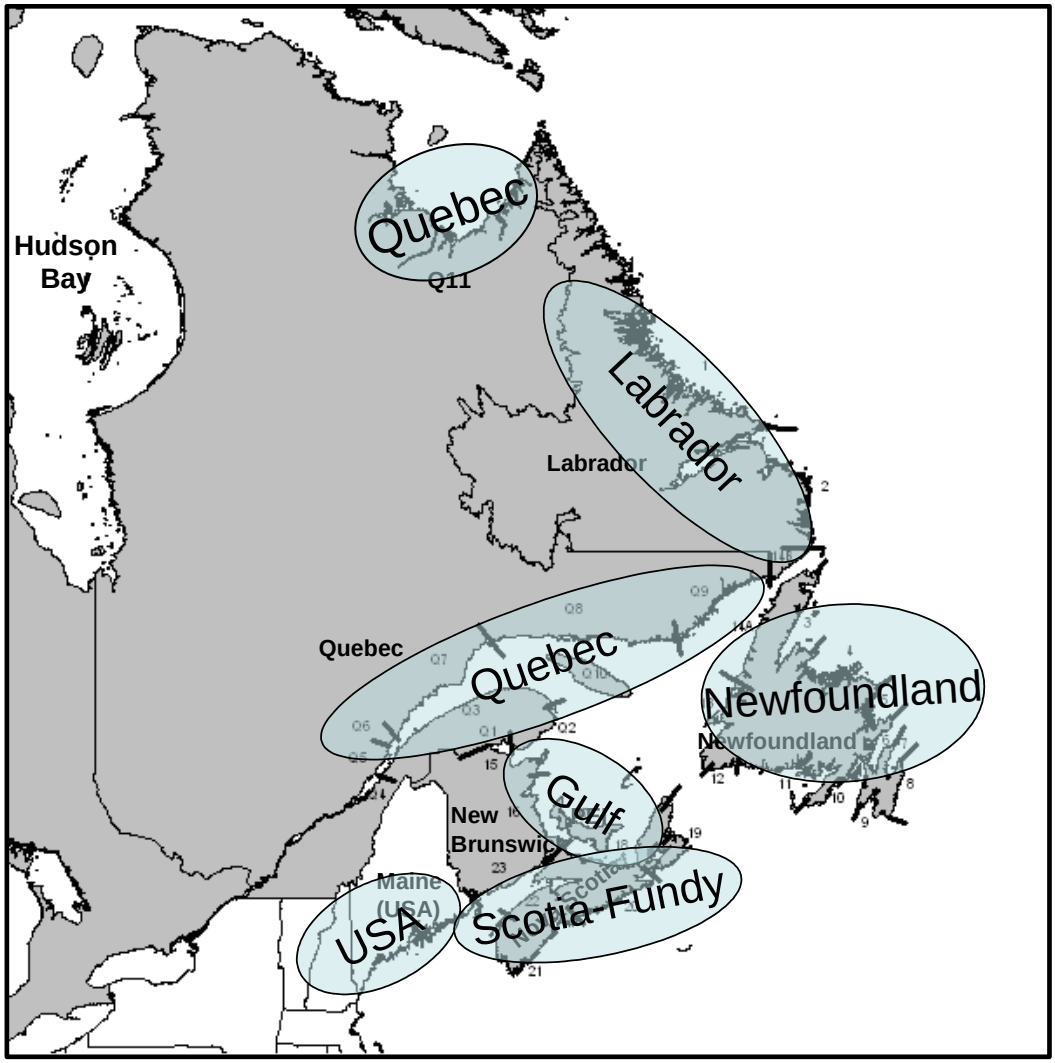

Figure 10.3.4. Regional groupings of Atlantic salmon in the North American Commission.

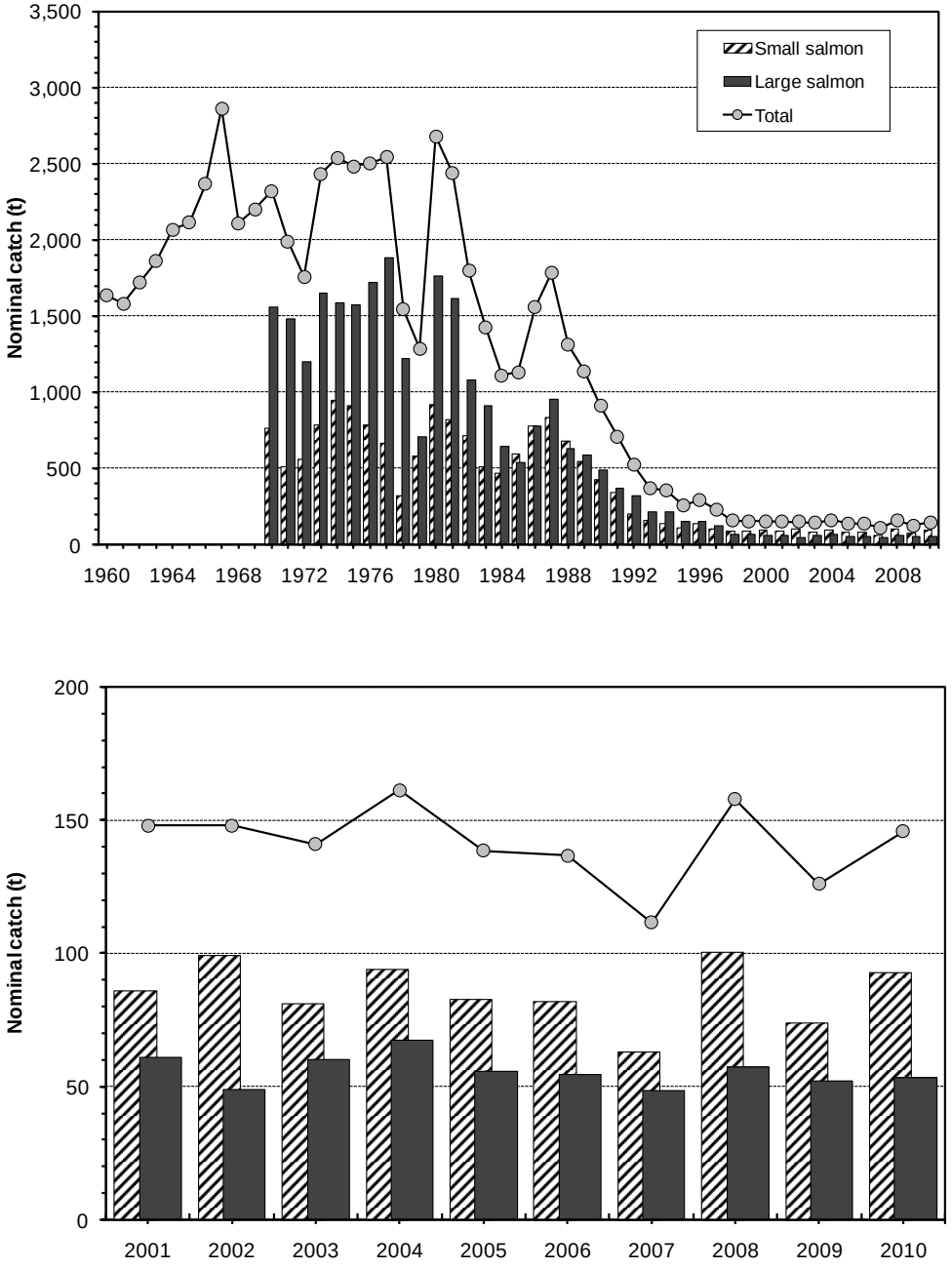

Figure 10.3.5. Harvest (t) of small salmon, large salmon and combined for Canada, 1960 to 2010 (top panel) and 2001 to 2010 (bottom panel) by all users.

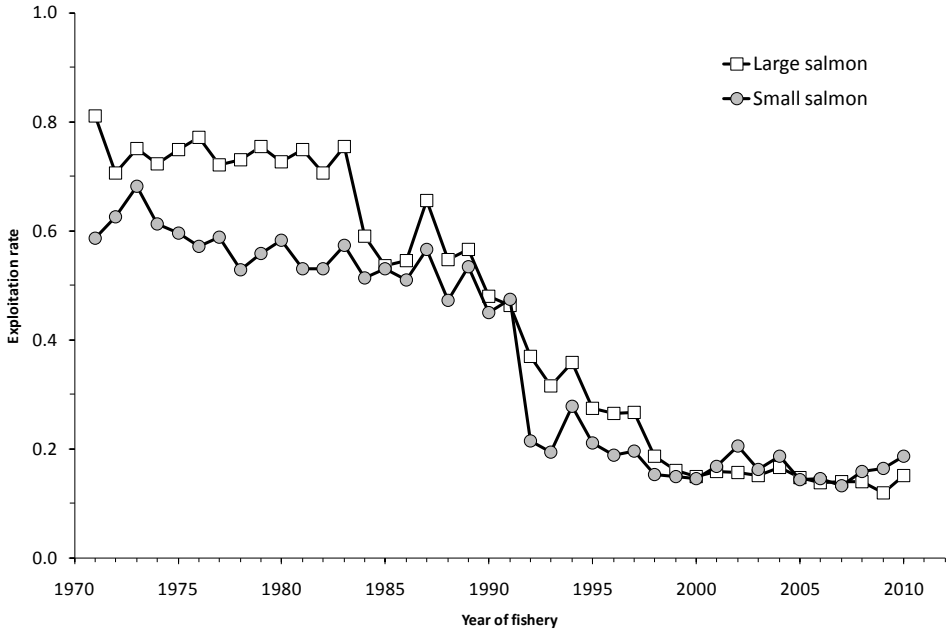

Figure 10.3.6. Exploitation rates in North America on the North American stock complex of small salmon (mostly 1SW) and large salmon (2SW, 3SW, and repeat spawners).

Table 10.3.1. Total reported nominal catch of salmon in homewaters by country (in tonnes round fresh weight), 1960–2010. (2010 figures include provisional data).

	Canada			USA	St. P&M
Year	Total	Large	Small	Total	Total
1970	2,323	1,562	761	1	-
1971	1,992	1,482	510	1	-
1972	1,759	1,201	558	1	-
1973	2,434	1,651	783	3	-
1974	2,539	1,589	950	1	-
1975	2,485	1,573	912	2	-
1976	2,506	1,721	785	1	3
1977	2,545	1,883	662	2	-
1978	1,545	1,225	320	4	-
1979	1,287	705	582	3	-
1980	2,680	1,763	917	6	-
1981	2,437	1,619	818	6	-
1982	1,798	1,082	716	6	-
1983	1,424	911	513	1	3
1984	1,112	645	467	2	3
1985	1,133	540	593	2	3
1986	1,559	779	780	2	3
1987	1,784	951	833	1	2
1988	1,310	633	677	1	2
1989	1,139	590	549	2	2
1990	911	486	425	2	2
1991	711	370	341	1	1
1992	522	323	199	1	2
1993	373	214	159	1	3
1994	355	216	139	0	3
1995	260	153	107	0	1
1996	292	154	138	0	2
1997	229	126	103	0	2
1998	157	70	87	0	2
1999	152	64	88	0	2
2000	153	58	95	0	2
2001	148	61	86	0	2
2002	148	49	99	0	2
2003	141	60	81	0	3
2004	161	68	94	0	3
2005	139	56	83	0	3
2006	137	55	82	0	3
2007	112	49	63	0	2
2008	158	58	100	0	4
2009	126	52	67	0	3
2010	146	53	93	0	3

10.2.3 Advice April 2011

ECOREGION North Atlantic
STOCK Atlantic Salmon at West Greenland

Advice for 2011

Because the NASCO Framework of Indicators of North American stocks for 2010 did not indicate the need for a revised analysis of catch options, no new management advice for 2011 is provided. The most recent multi-year advice for the West Greenland fishery was provided by ICES (2009). In that assessment, none of catch options for 2009, 2010, and 2011 were consistent with the management objectives defined for this stock unit.

Stock status

For West Greenland, stock status for North America and the Northeast Atlantic are relevant. The stock complex at West Greenland is below conservation limits and thus suffering reduced reproductive capacity. In European and North American areas, the overall status of stocks contributing to the West Greenland fishery is among the lowest recorded, and as a result, the abundance of salmon within the West Greenland area is thought to be extremely low compared to historical levels. Estimates of pre-fishery abundance suggest continued low abundance of North American adult salmon. Recruitment patterns of non-maturing 1SW recruits for Southern NEAC show a declining trend over the time period. The non-maturing 1SW stock has been at full reproductive capacity for most of the time-series until 1997. Thereafter the stock was either at risk of reduced reproductive capacity or suffering reduced reproductive capacity with the exception of 2004 and 2010, when the stock was at full reproductive capacity. This is broadly consistent with the general pattern of decline in marine survival in most monitored stocks in the area.

Despite major changes in fisheries management 18 to 25 years ago and increasingly more restrictive fisheries measures since, returns in these regions have remained near historical lows and many populations are currently threatened with extirpation. The continued low abundance of salmon stocks across North America and in the Northeast Atlantic, despite significant fishery reductions, further strengthens the conclusions that factors other than fisheries are constraining production.

Management plans

The North Atlantic Salmon Conservation Organization (NASCO) has adopted an Action Plan for Application of the Precautionary Approach which stipulates that management measures should be aimed at maintaining all stocks above their conservation limits by the use of management targets. NASCO has adopted the region-specific CLs as limit reference points (S_{lim}); having populations fall below these limits should be avoided with high probability. Within the agreed management plan, a risk level of 75% has been agreed for the provision of catch advice on fish exploited at West Greenland (non-maturing 1SW fish from North America and non-maturing 1SW fish from Southern NEAC).

Biology

Atlantic salmon (*Salmo salar*) is an anadromous species found in rivers of countries bordering the North Atlantic. In the Northeast Atlantic area their current distribution extends from northern Portugal to the Pechora River in Northwest Russia and on to Iceland. In the Northwest Atlantic they range from the Connecticut River (USA, 41.6°N) northward to the Leaf River,

Quebec, Canada (58.8°N). Juveniles emigrate to the ocean at ages one to eight years (dependent on latitude) and generally return after one or two years at sea. Long distance migrations to ocean feeding grounds are known to take place with adult salmon from both the North American and Northeast Atlantic stocks migrating to West Greenland to feed on abundant fish and invertebrate prey during their second summer and fall at sea.

Environmental influence on the stock

Environmental conditions in both freshwater and marine environments have a marked effect on the status of salmon stocks. Across the North Atlantic, a range of problems in the freshwater environment play a significant role in explaining the poor status of stocks. In many cases river damming and habitat deterioration have had a devastating effect on freshwater environmental conditions. In the marine environment, return rates of adult salmon have declined through the 1980s and are now at the lowest levels in the time-series for some stocks, even after closure of marine fisheries. Climatic factors modifying ecosystem conditions and predator fields of salmon at sea are considered to be the main contributory factors to lower productivity which is expressed almost entirely in terms of lower marine survival.

The fisheries

Catches of Atlantic salmon at West Greenland (Figure 10.4.1) decreased until the closure of the commercial fishery for export in 1998, but the subsistence fishery has been increasing in recent years (Table 10.4.1). A total catch of 40 t of salmon was reported for the 2010 fishery compared to 26 t of salmon in the 2009 fishery, an increase of 53%. The increase in 2010 occurred in NAFO Division 1A, the total catch reported in this Division was the highest reported since 1989 at 17 t (Table 10.4.2). In total, 80% of the salmon sampled were of North American origin and 20% were determined to be of European origin. The 1SW age group dominated the catch at 98% (Table 10.4.3). Approximately 10 000 (34 t) North American origin fish and approximately 2600 (9 t) European origin fish were harvested in 2010. These totals remain among the lowest in the time-series, although they are the highest of the more recent years since 2001 (Figure 10.4.2).

Effects of the fisheries on the ecosystem

The current salmon fishery is practiced with nearshore surface gillnets. There is no information on bycatch of other species with this gear.

Quality considerations

Uncertainties in input variables to the stock status and stock forecast models are incorporated in the assessment. Catch reporting is considered to be incomplete.

Scientific basis

Assessments are carried out using common input variables across stock complexes in NEAC and NAC. Run–reconstruction models and Bayesian forecasts are performed taking into account uncertainties in the data.

ECOREGION North Atlantic
STOCK Atlantic Salmon at West Greenland

Reference points

For the Southern NEAC non-maturing stock complex, the conservation limit (CL) is 258 720 salmon. For NAC, the conservation limit expressed in 2SW salmon spawners totals 152 548 fish.

Outlook for 2011

The total PFA of the non-maturing 1SW salmon of the Southern NEAC complex ranged from 1.7 million to 1 million fish between 1978 and 1993, declining rapidly to under 500 thousand fish in 2008 (Table 10.4.4). Forecasts into 2012 to 2014 for the non-maturing Southern NEAC complex indicate that there are no catch options at West Greenland that would allow the management objectives for this stock to be met.

No outlook is provided relative to the North American stock because the Framework of Indicators of North American stocks for 2010 did not indicate the need for an updated forecast for 2011.

MSY approach

Atlantic salmon has characteristics of short-lived fish stocks; mature abundance is sensitive to annual recruitment because there are only a few age groups in the adult spawning stock. Incoming recruitment is often the main component of the fishable stock. For such fish stocks, the ICES MSY approach is aimed at achieving a target escapement (MSY $B_{escapement}$, the amount of biomass left to spawn). No catch should be allowed unless this escapement can be achieved. The escapement level should be set so there is a low risk of future recruitment being impaired, similar to the basis for estimating B_{pa} in the precautionary approach. In short-lived stocks, where most of the annual surplus production is from recruitment (not growth), MSY $B_{escapement}$ and B_{pa} might be expected to be similar.

Conservation limits (CLs) for North Atlantic salmon stock complexes have been defined by ICES as the level of stock (number of spawners) that will achieve long-term average maximum sustainable yield (MSY $B_{escapement}$). It should be noted that this is equivalent to the ICES B_{MSY} and B_{pa} as applied to short-lived stocks. Therefore, stocks are regarded by ICES as being at full reproductive capacity only if they are above MSY $B_{escapement}$, or above CLs.

ICES considers that to be consistent with the MSY and the precautionary approach, fisheries should only take place on maturing 1SW salmon and non-maturing 1SW salmon from rivers where stocks have been shown to be at full reproductive capacity. Furthermore, due to the different status of individual stocks within the stock complex, mixed-stock fisheries present particular threats to stock status.

Management objectives

NASCO has identified the organization's primary management objective:

"To contribute through consultation and cooperation to the conservation, restoration, enhancement and rational management of salmon stocks taking into account the best scientific advice available".

NASCO further stated that "the Agreement on the Adoption of a Precautionary Approach states that an objective for the management of salmon fisheries is to provide the diversity and abundance of salmon stocks" and NASCOs Standing Committee on the Precautionary Approach interpreted this as being "to maintain both the productive capacity and diversity of salmon stocks" (NASCO, 1998). NASCO's Action Plan for Application of the Precautionary Approach (NASCO, 1999) provides an interpretation of how this is to be achieved:

- "Management measures should be aimed at maintaining all stocks above their conservation limits by the use of management targets".
- "Socio-economic factors could be taken into account in applying the Precautionary Approach to fisheries management issues":
- "The precautionary approach is an integrated approach that requires, inter alia, that stock rebuilding programmes (including as appropriate, habitat improvements, stock enhancement, and fishery management actions) be developed for stocks that are below conservation limits".

NASCO has adopted the region-specific CLs (NASCO, 1998). These CLs are limit reference points (S_{lim}); having populations fall below these limits should be avoided with high probability.

The advice for the West Greenland fishery is based on achieving management objectives at a probability level of 75% (ICES, 2003). For the Southern NEAC non-maturing 1SW (MSW) stock, the objective is to meet the Spawner Escapement Reserve (SER) for the complex. For the North American Commission, the management objectives are to simultaneously meet, or exceed, the 2SW CLs in the four northern areas (Labrador, Newfoundland, Quebec, Gulf), and to achieve a 25% increase in regional returns relative to a baseline period for the two southern regions (Scotia-Fundy, USA) (ICES, 2003).

Additional considerations

Fisheries on mixed stocks pose particular difficulties for management, when they cannot target only stocks that are at full reproductive capacity. The management of a fishery should ideally be based on the status of all stocks exploited in the fishery. Conservation would be best achieved if fisheries target stocks that have been shown to be at full reproductive capacity. Fisheries in estuaries and especially rivers are more likely to meet this requirement.

Sampling the fishery at West Greenland has made information available to examine the changing weights and condition factors of 1SW non-maturing salmon. Over the period of sampling (1969 to 2010) the mean weight of these fish appeared to decline from high values in the 1970s to the lowest mean weights of the time-series in 1990 to 1995, before increasing subsequently to 2010 (Figure 10.4.3). These mean weight trends are unadjusted for the period of sampling and it is known that salmon grow quickly during the period of sampling in the fishery from August to October. For the standardized sampling week 36 (Sept. 3 to 9; from which most of the samples were obtained over 2002 to 2010) and for a standardized fork length of 64 cm, there was a significant year effect in the predicted whole weight of salmon for 2002 to 2010 (Figure 10.4.3). The heaviest fish at length for NAC were sampled in 2009 and the lightest fish at length in 2005. For NEAC origin salmon, the lightest fish at length were also sampled in 2005 and the heaviest fish at length were sampled in 2002 (Figure 10.4.3). The analysis of condition of salmon over the period 2002 to 2010 contrasts with the interpretation of salmon size at West Greenland based entirely on weights or lengths unadjusted for the period of sampling or for the length of the fish. With the exception of the

2005 sampling year for NAC and 2005 as well as 2002 for NEAC, there is no apparent change in condition of 1SW non-maturing salmon at West Greenland.

Scientific basis

Data and methods

The international sampling programme for the fishery at West Greenland agreed by the parties at NASCO continued in 2010. The sampling was undertaken in three different communities representing three different NAFO Divisions. As in previous years no sampling occurred in the fishery in East Greenland in 2010. The decentralized landings and broad geographic distribution of the fishery causes practical problems for the sampling program. In total, 1265 individual salmon were inspected in 2010 representing 10% by weight of the reported landings.

Non-reporting of harvest becomes evident upon comparison of the reported landings to the sample data. When there is this type of weight discrepancy, the reported landings are adjusted according to the total weight of the fish identified as being landed during the sampling effort and these adjusted landings are carried forward for all future assessments (Table 10.4.5). In 2010 this occurred in all three sampled communities. The total discrepancy equalled 5.1 t and the catch for assessment purposes was 43 t (Table 10.4.5).

Uncertainties in assessments and forecasts

The fluctuations in the numbers of people reporting catches and the catches themselves in each of the NAFO Divisions suggest that there are inconsistencies in the catch data and highlights the need for better data. Since 2002, in at least one of the divisions where international samplers were present, the sampling team observed more fish than were reported as being landed. There is presently no quantitative approach for estimating the unreported catch, but the 2010 value is likely to have been at the same level proposed in recent years (10 t).

Comparison with previous assessment and catch options

The NASCO Framework of Indicators of North American stocks for 2010 did not indicate the need for a revised analysis of catch options and no new management advice for 2011 is provided. The assessment was updated to 2010 and the stock status was consistent with the previous year's assessment.

Assessment and management area

The advice for the West Greenland fishery is based on the Southern NEAC non-maturing 1SW stock complex and the North American 2SW complex.

Sources of information

ICES. 2003. Report of the Working Group on North Atlantic Salmon. ICES Headquarters, Copenhagen, 31 March–10 April 2003. ICES Document CM 2003/ACFM:19. 297 pp.

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NASCO. 1998. North Atlantic Salmon Conservation Organization. Agreement on the adoption of a precautionary approach. Report of the 15th annual meeting of the Council. CNL(98)46. 4 pp.

NASCO. 1999. North Atlantic Salmon Conservation Organization. Action plan for the application of the precautionary approach. CNL(99)48. 14pp.

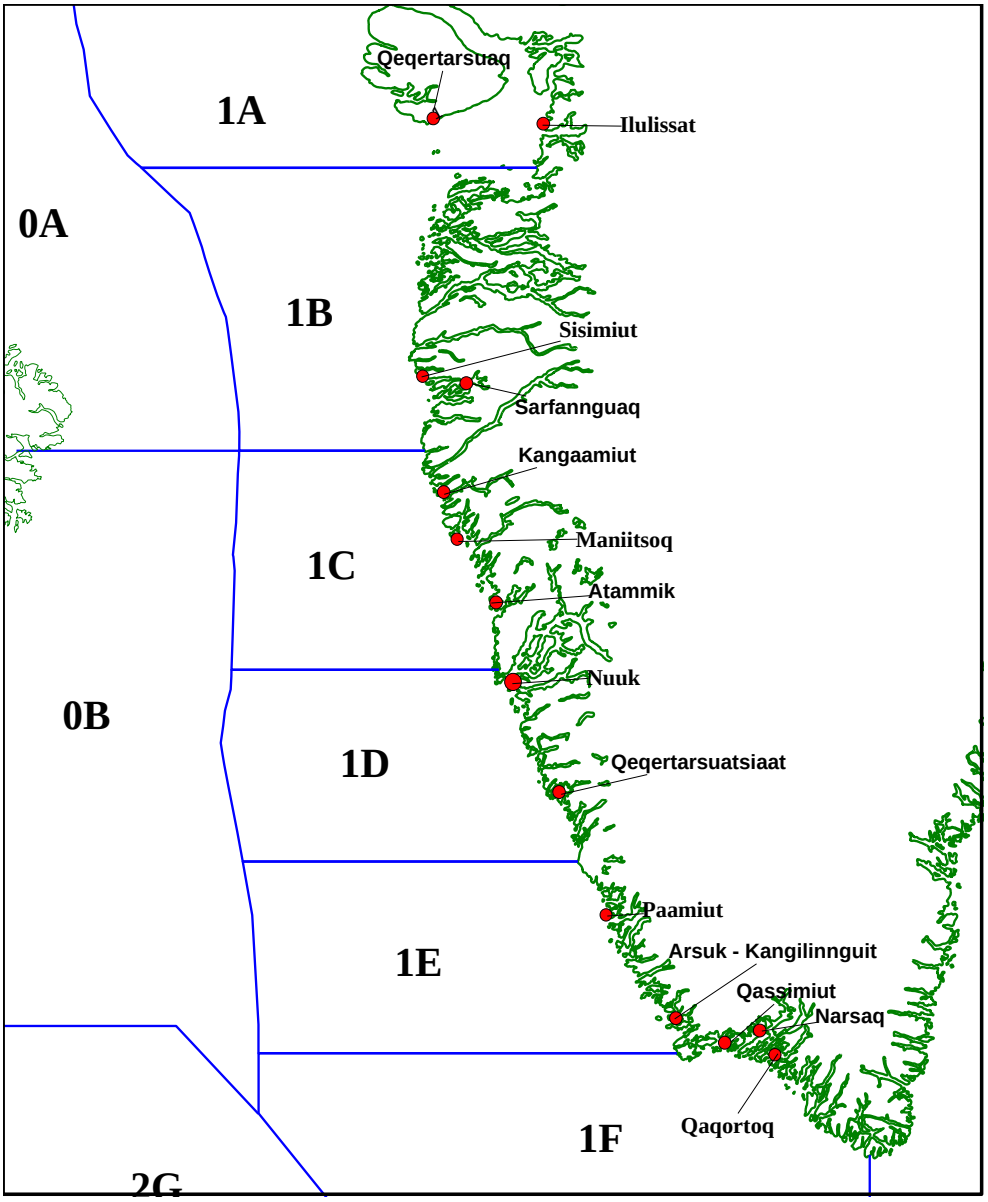

Figure 10.4.1. Location of NAFO divisions along the coast of West Greenland.

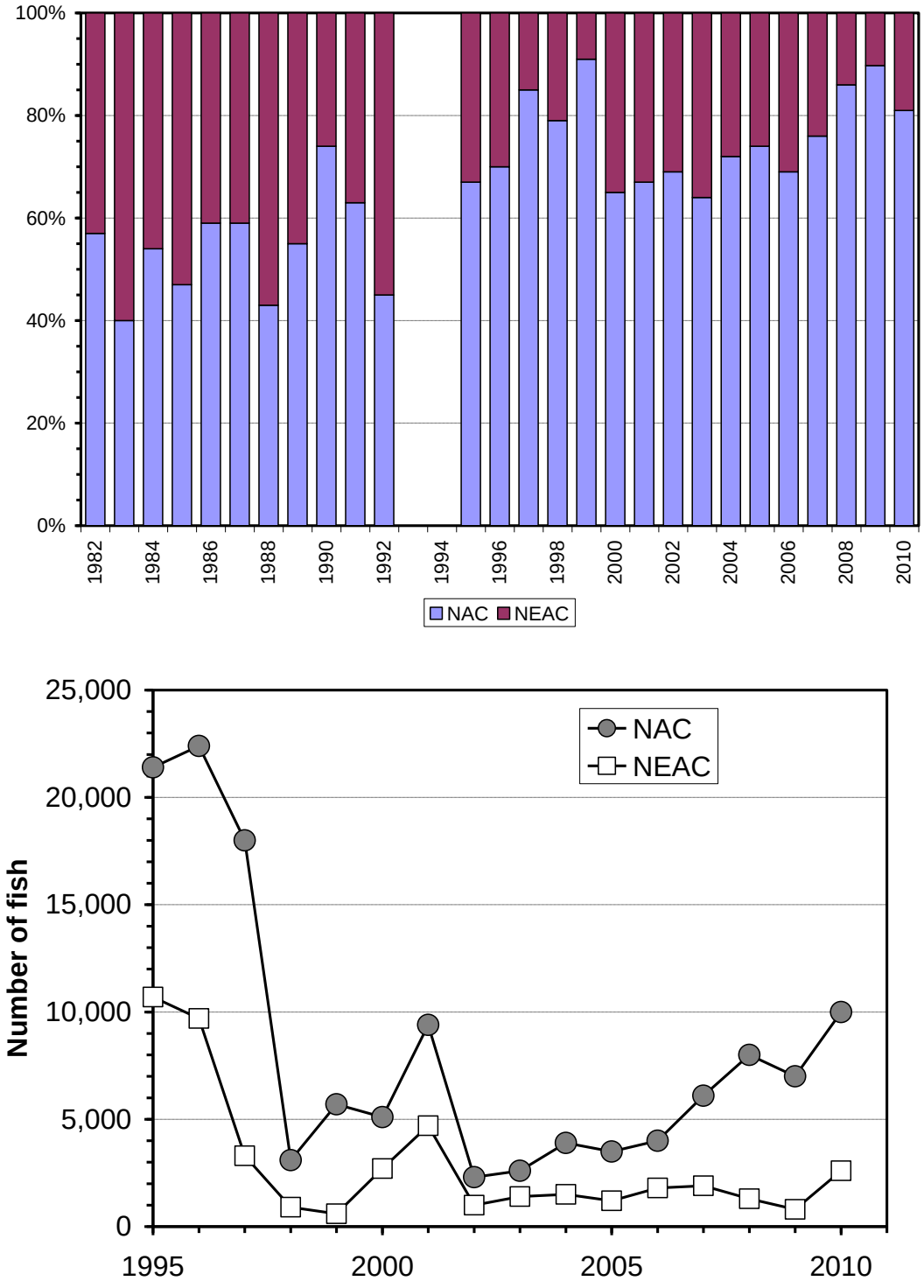

Figure 10.4.2. Upper panel: Percent by continent of origin during 1982 to 2010. Lower panel: Estimated number of salmon by continent of origin in the catches at West Greenland for fishery years 1995 to 2010.

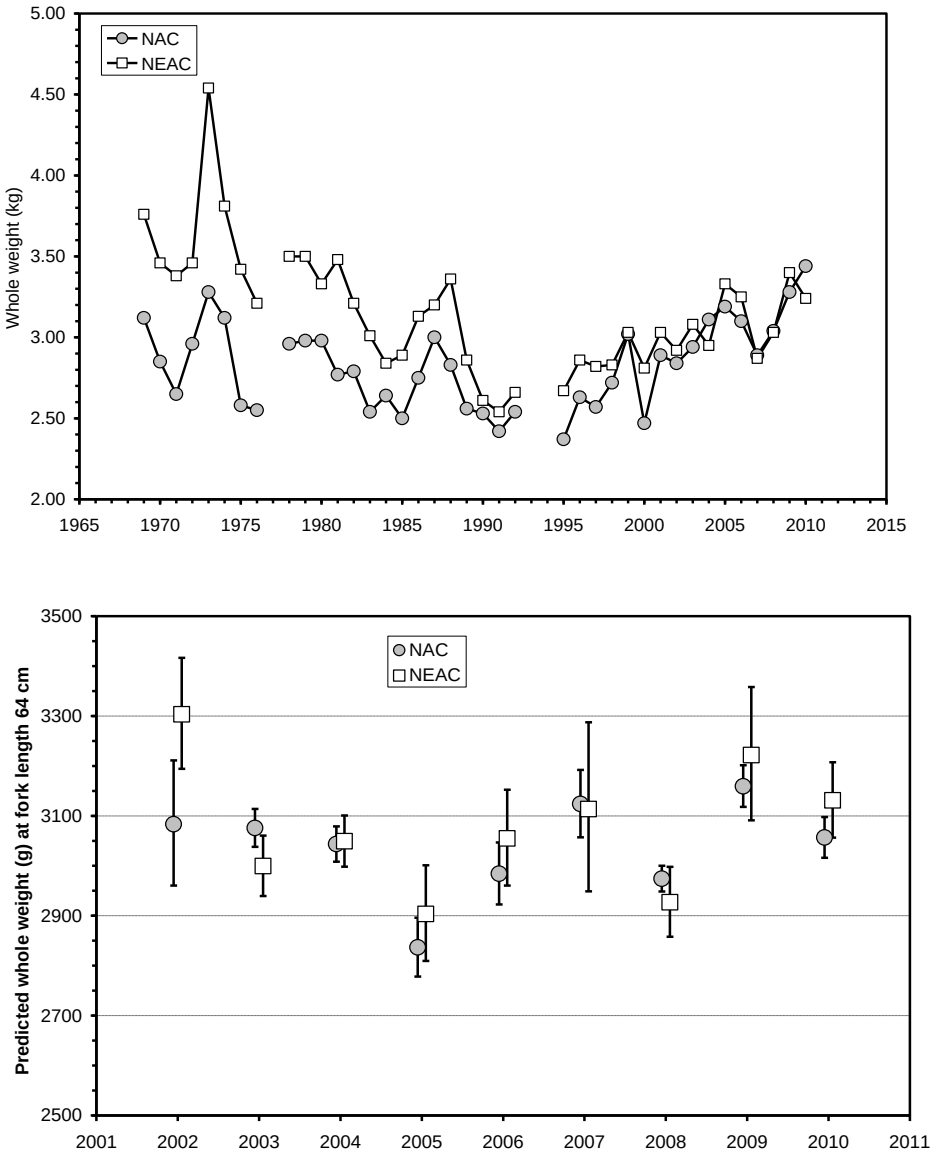

Figure 10.4.3. Upper panel: Sampled mean whole weight (kg) of 1SW non-maturing salmon by continent of origin over the period 1969 to 2010. Lower panel: The predicted whole weight (g) (mean, +/- 2 std errors) of 1SW non-maturing salmon, by continent of origin, sampled at West Greenland and adjusted for standard sampling week 36 and a standardized fork length of 64 cm.

Table 10.4.1. Nominal catches and management of Atlantic salmon at West Greenland since 1971.

Year	Total (t)	Quota (t)	Comments
1971	2689	-	
1972	2113	1100	
1973	2341	1100	
1974	1917	1191	
1975	2030	1191	
1976	1175	1191	
1977	1420	1191	
1978	984	1191	
1979	1395	1191	
1980	1194	1191	
1981	1264	1265	Quota set to a specific opening date for the fishery
1982	1077	1253	Quota set to a specific opening date for the fishery
1983	310	1191	
1984	297	870	
1985	864	852	
1986	960	909	
1987	966	935	
1988	893	840	Quota for 1988-90 was 2520 t with an opening date of August 1. Annual catches were not to exceed an annual average (840 t) by more than 10%. Quota adjusted to 900 t in 1989 and 924 t in 1990 for later opening dates.
1989	337	900	
1990	274	924	
1991	472	840	
1992	237	258	Quota set by Greenland authorities
1993		89	The fishery was suspended. NASCO adopt a new quota allocation model.
1994		137	The fishery was suspended and the quotas were bought out.
1995	83	77	Quota advised by NASCO
1996	92	174	Quota set by Greenland authorities
1997	58	57	Private (non-commercial) catches to be reported from now
1998	11	20	Fishery restricted to catches used for internal consumption in Greenland
1999	19	20	
2000	21	20	
2001	43	114	Final quota calculated according to the ad hoc management system
2002	9	55	Quota bought out, quota represented the maximum allowable catch (no factory
2003	9		Quota set to nil (no factory landing allowed), fishery restricted to catches used
2004	15		same as previous year
2005	15		same as previous year
2006	22		Quota set to nil (no factory landing allowed) and fishery restricted to catches
2007	25		Quota set to nil (no factory landing allowed), fishery restricted to catches used
2008	26		same as previous year
2009	26		same as previous year
2010	40		same as previous year

Table 10.4.2. Distribution of nominal catches (metric tonnes) by Greenland vessels since 1977.

	NAFO Division							West	East	
Year	1A	1B	1C	1D	1E	1F	NK	Greenland	Greenland	Total
1977	201	393	336	207	237	46	-	1 420	6	1 426
1978	81	349	245	186	113	10	-	984	8	992
1979	120	343	524	213	164	31	-	1 395	+	1 395
1980	52	275	404	231	158	74	-	1 194	+	1 194
1981	105	403	348	203	153	32	20	1 264	+	1 264
1982	111	330	239	136	167	76	18	1 077	+	1 077
1983	14	77	93	41	55	30	-	310	+	310
1984	33	116	64	4	43	32	5	297	+	297
1985	85	124	198	207	147	103	-	864	7	871
1986	46	73	128	203	233	277	-	960	19	979
1987	48	114	229	205	261	109	-	966	+	966
1988	24	100	213	191	198	167	-	893	4	897
1989	9	28	81	73	75	71	-	337	-	337
1990	4	20	132	54	16	48	-	274	-	274
1991	12	36	120	38	108	158	-	472	4	476
1992	-	4	23	5	75	130	-	237	5	242
1993 [1]	-	-	-	-	-	-	-	-	-	-
1994 [1]	-	-	-	-	-	-	-	-	-	-
1995	+	10	28	17	22	5	-	83	2	85
1996	+	+	50	8	23	10	-	92	+	92
1997	1	5	15	4	16	17	-	58	1	59
1998	1	2	2	4	1	2	-	11	-	11
1999	+	2	3	9	2	2	-	19	+	19
2000	+	+	1	7	+	13	-	21	-	21
2001	+	1	4	5	3	28	-	43	-	43
2002	+	+	2	4	1	2	-	9	-	9
2003	1	+	2	1	1	5	-	9	-	9
2004	3	1	4	2	3	2	-	15	-	15
2005 *	1	3	2	1	3	5	-	15	-	15
2006 *	6	2	3	4	2	4	-	22	-	22
2007 *	2	5	6	4	5	2	-	25	-	25
2008 *	5	2	10	2	3	5	0	26	-	26
2009 *	0.2	6	7	3	4	5	0	26	1	26
2010 *	17	5	2	3	7	4	0	38	2	40

[1] The fishery was suspended
+ Small catches <0.5t
- No catch
* Corrected from gutted weight to total weight (factor 1.11).

Table 10.4.3. Summary biological characteristics of catches at West Greenland in 2010.

Distribution of 2010 nominal catch (metric tons)

Total	NAFO Division					
	1A	1B	1C	1D	1E	1F
38	17	5	2	3	7	4

River age distribution (%) by origin (NA – North America, E – Europe)

	1	2	3	4	5	6	7	8
NA	1.6	21.7	47.9	21.7	6.3	0.8	0	0
E	11.3	57.1	27.3	3.4	0.8	0	0	0

Length and weight by origin and sea age

	1 SW		2 SW		Previous spawners		All sea ages	
	Fork length (cm)	Whole weight (kg)	Fork length (cm)	Whole weight (kg)	Fork length (cm)	Whole weight (kg)	Fork length (cm)	Whole weight (kg)
NA	66.7	3.44	80.0	6.45	72.4	4.17	66.9	3.28
E	65.2	3.24	75.0	5.45	70.0	3.92	65.4	3.42

Continent of Origin (%)

North America	Europe
79.9	20.1

Sea age composition (%) by continent of origin:
North America (NA) and Europe (E)

	1SW	2SW	Previous Spawners
NA	98.2	0.4	1.4
E	97.5	1.7	0.8

Table 10.4.4. Estimated pre-fishery abundance (median values) of non-maturing 1SW salmon (potential MSW returns) by NEAC country or region and year.

Year	Northern NEAC								Southern NEAC									NEAC Area		
	Finland	Iceland	Norway	Russia	Sweden	Total			France	Iceland	Ireland	UK(EW)	UK(NI)	UK(Scot)	Total			Total		
		N&E				2.5%	median	97.5%		S&W					2.5%	median	97.5%	2.5%	median	97.5%
1971	63,447	26,037		270,747	7,389				56,394	63,499	401,682	394,450	31,956	1,737,264	2,238,000	**2,697,076**	3,278,712			
1972	75,289	24,377		430,928	10,289				36,185	57,263	392,656	292,373	27,945	1,720,197	2,074,687	**2,537,468**	3,129,722			
1973	111,305	22,953		398,134	7,024				20,431	49,367	407,073	212,105	30,530	1,223,221	1,597,801	**1,955,357**	2,408,376			
1974	124,416	25,382		432,411	5,851				31,557	52,473	455,991	272,140	25,087	1,347,815	1,792,981	**2,197,213**	2,717,409			
1975	102,073	20,942		368,072	6,076				27,989	45,390	344,259	182,660	17,431	989,912	1,343,482	**1,614,414**	1,951,649			
1976	62,266	28,703		254,136	4,228				19,426	44,013	280,445	180,878	17,170	920,180	1,202,108	**1,470,711**	1,808,046			
1977	39,993	36,873		217,594	3,462				20,145	56,812	250,528	158,909	22,386	1,104,584	1,321,546	**1,621,549**	2,007,060			
1978	42,514	24,532		201,287	6,357				18,623	36,579	214,993	84,500	15,697	804,645	956,389	**1,183,229**	1,473,940			
1979	44,613	34,566		351,769	13,067				35,824	51,805	256,921	223,718	19,874	1,043,026	1,345,801	**1,641,382**	2,014,102			
1980	49,010	13,261		255,209	12,978				26,310	35,413	210,785	294,099	15,568	1,120,329	1,402,163	**1,713,882**	2,104,575			
1981	63,906	14,837		228,299	16,367				17,792	25,267	140,994	136,191	22,516	921,661	1,041,062	**1,268,735**	1,554,930			
1982	69,411	11,350		280,314	12,209				17,515	41,082	297,856	139,504	31,592	931,262	1,177,728	**1,499,560**	2,001,072			
1983	65,888	13,949	819,634	258,462	11,019	961,670	**1,173,892**	1,435,324	23,380	34,605	150,913	102,392	12,430	725,766	854,352	**1,052,587**	1,300,186	1,852,501	**2,227,111**	2,681,342
1984	51,404	9,281	770,430	282,836	8,025	923,376	**1,123,813**	1,371,091	17,633	25,327	161,658	140,662	16,106	864,131	994,111	**1,228,681**	1,527,864	1,954,062	**2,356,010**	2,842,832
1985	45,047	24,182	916,753	284,288	8,843	1,050,147	**1,282,834**	1,570,128	21,661	21,389	201,943	203,971	18,110	1,175,117	1,337,677	**1,647,698**	2,047,058	2,437,365	**2,934,412**	3,543,522
1986	56,333	24,963	714,321	221,398	13,277	853,195	**1,036,102**	1,257,318	13,481	19,050	235,533	167,032	9,260	814,668	1,035,809	**1,263,337**	1,550,632	1,922,113	**2,301,197**	2,758,477
1987	36,090	16,038	568,426	202,550	10,423	689,488	**837,972**	1,019,179	28,258	21,263	172,835	201,843	26,060	1,145,106	1,295,518	**1,602,263**	1,987,717	2,018,206	**2,441,807**	2,962,013
1988	40,867	13,819	440,349	205,194	23,914	598,043	**721,085**	872,122	16,529	19,166	169,757	172,491	20,765	1,051,805	1,188,221	**1,454,780**	1,788,531	1,810,915	**2,177,409**	2,622,184
1989	51,140	14,462	505,427	253,321	16,639	691,075	**836,565**	1,014,942	12,973	18,940	81,865	184,474	18,887	813,673	916,305	**1,136,047**	1,413,802	1,635,174	**1,974,891**	2,385,648
1990	61,425	9,875	396,712	229,510	16,011	582,571	**709,642**	866,146	11,070	18,520	102,130	79,885	9,705	595,943	659,527	**820,521**	1,026,010	1,265,907	**1,530,647**	1,854,763
1991	65,555	14,505	413,816	210,460	19,298	590,169	**719,506**	879,265	14,949	20,778	85,460	68,204	22,226	808,269	821,547	**1,020,837**	1,278,176	1,437,625	**1,741,908**	2,117,635
1992	76,037	16,357	396,204	248,301	26,006	625,138	**757,768**	920,378	7,380	10,227	79,476	68,962	52,437	654,345	703,756	**879,165**	1,101,549	1,353,048	**1,638,351**	1,984,324
1993	63,065	13,879	388,222	223,091	19,190	577,165	**703,688**	859,160	12,833	16,510	114,750	86,115	18,418	752,150	800,967	**1,005,218**	1,267,692	1,404,924	**1,711,432**	2,087,870
1994	39,082	9,694	417,203	253,350	13,743	596,514	**726,396**	885,257	6,155	18,605	111,235	87,133	15,597	697,970	747,970	**941,856**	1,190,880	1,370,766	**1,669,531**	2,037,655
1995	34,537	12,680	417,311	192,771	17,330	549,841	**670,675**	818,606	11,272	12,022	77,207	89,265	17,105	545,225	602,478	**756,800**	953,711	1,175,699	**1,429,094**	1,737,052
1996	50,170	7,086	266,762	151,783	10,805	395,754	**483,867**	593,710	5,953	13,406	96,491	56,493	21,361	372,426	453,397	**573,887**	728,343	868,925	**1,058,516**	1,295,364
1997	42,196	10,325	320,487	187,736	7,969	461,929	**563,737**	689,457	4,891	8,297	55,640	34,983	29,366	389,174	418,783	**524,666**	661,513	899,161	**1,089,284**	1,322,934
1998	39,468	11,855	341,166	166,102	6,786	456,922	**562,598**	695,406	10,260	16,181	85,640	78,027	13,311	297,953	396,163	**517,113**	680,050	877,246	**1,082,289**	1,337,155
1999	87,916	6,949	473,482	289,171	14,913	707,283	**865,633**	1,056,320	7,160	4,406	107,059	82,735	17,774	380,048	480,581	**607,701**	772,504	1,214,699	**1,474,241**	1,789,584
2000	126,433	7,967	556,908	204,234	17,920	740,548	**910,342**	1,119,821	8,439	7,711	95,995	87,069	13,060	363,648	458,399	**584,594**	751,166	1,229,196	**1,497,470**	1,824,682
2001	101,296	7,538	483,326	222,969	13,143	670,161	**824,885**	1,015,620	6,319	8,360	110,681	81,070	15,512	299,839	419,029	**531,821**	678,757	1,114,241	**1,358,440**	1,655,711
2002	71,877	7,921	427,028	155,807	14,985	550,711	**676,114**	830,048	9,013	13,349	116,198	93,541	10,145	369,366	485,399	**622,286**	799,444	1,062,093	**1,300,022**	1,592,159
2003	34,476	7,793	387,090	120,194	10,859	452,206	**558,426**	691,341	16,729	10,791	64,038	75,908	9,073	478,161	519,681	**663,030**	848,011	997,063	**1,223,113**	1,502,530
2004	26,655	9,657	356,320	144,014	8,239	441,256	**541,469**	667,795	10,296	9,527	82,737	88,501	11,514	377,096	463,246	**588,150**	753,760	926,420	**1,131,615**	1,389,071
2005	46,693	9,264	451,774	137,669	8,235	530,529	**649,881**	799,222	10,336	7,908	59,937	75,766	7,345	392,072	439,575	**565,187**	730,821	996,516	**1,216,600**	1,491,198
2006	66,447	8,910	384,673	142,612	11,380	499,332	**610,195**	745,369	9,856	4,867	27,374	69,734	10,089	377,021	392,415	**505,593**	654,948	914,377	**1,117,142**	1,365,634
2007	63,200	11,472	443,385	225,283	16,225	609,498	**752,882**	932,070	10,825	5,573	40,666	77,539	6,115	422,474	441,004	**573,062**	747,179	1,081,739	**1,327,677**	1,633,110
2008	29,441	9,235	346,929	190,698	14,691	473,237	**584,885**	725,085	5,680	8,339	45,512	56,693	7,982	352,762	373,212	**484,500**	631,205	871,942	**1,070,784**	1,319,194
2009	46,597	14,616	382,467	243,537	18,074	562,345	**694,437**	859,538	4,775	10,715	31,084	99,018	7,335	486,579	492,763	**651,522**	867,649	1,087,326	**1,349,104**	1,676,653
10yr Av.	61,311	9,437	421,990	178,702	13,375	552,982	**680,351**	838,591	9,227	8,714	67,422	80,484	9,817	391,902	448,472	**576,975**	746,294	1,028,091	**1,259,197**	1,544,994

Table 10.4.5. Reported landings (kg) for the West Greenland Atlantic salmon fishery from 2002 by NAFO Division as reported by the Home Rule Government and the division-specific adjusted landings where the sampling teams observed more fish landed than were reported.

		NAFO Division						
Year		1A	1B	1C	1D	1E	1F	Total
2002	Reported	14	78	2100	3752	1417	1661	9022
	Adjusted						2408	9769
2003	Reported	619	17	1621	648	1274	4516	8694
	Adjusted			1782	2709		5912	12 312
2004	Reported	3476	611	3516	2433	2609	2068	14 712
	Adjusted				4929			17 209
2005	Reported	1294	3120	2240	756	2937	4956	15303
	Adjusted				2730			17276
2006	Reported	5427	2611	3424	4731	2636	4192	23021
	Adjusted							
2007	Reported	2019	5089	6148	4470	4828	2093	24647
	Adjusted						2252	24806
2008	Reported	4882	2210	10024	1595	2457	4979	26147
	Adjusted				3577		5478	28627
2009	Reported	195	6151	7090	2988	4296	4777	25497
	Adjusted				5466			27975
2010	Reported	17263	4558	2363	2747	6766	4252	37949
	Adjusted		4824		6566		5274	43056

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List of Participants

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